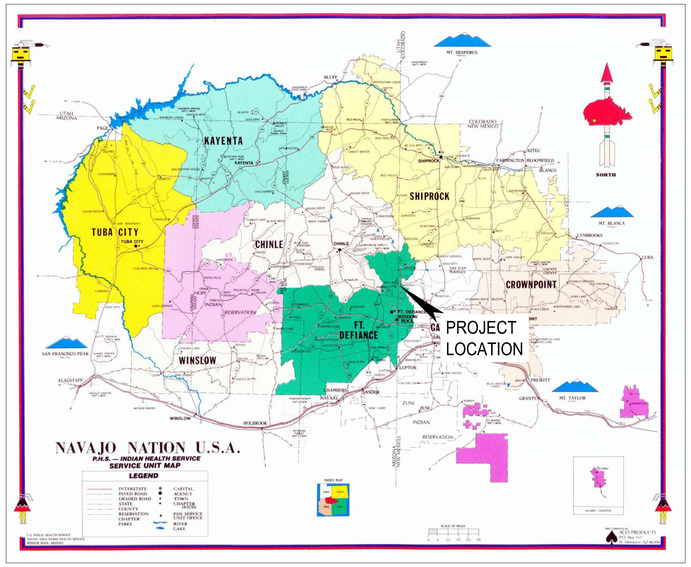
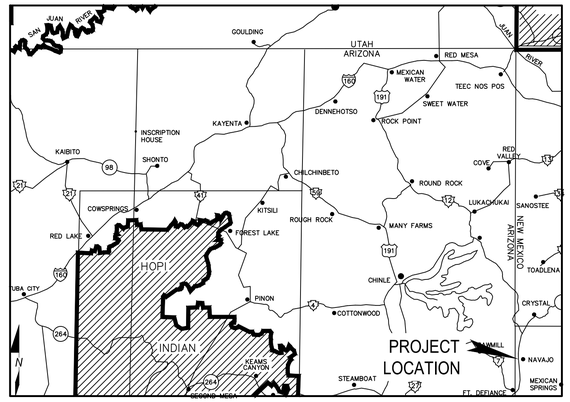
REFURBISHMENT & UPGRADE OF EXISTING LIFT STATION

NAVAJO (RED LAKE) CHAPTER, MCKINLEY COUNTY, NEW MEXICO
OCTOBER 2020



SITE LOCATION MAP
(NOT TO SCALE)



VICINITY MAP
(NOT TO SCALE)

100% PLANS
ISSUED FOR CONSTRUCTION
BY:LASPAAS DATE:Oct 12, 2020 4:20pm

REFURBISHMENT & UPGRADE OF LIFT STATION-NAVAJO 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
G-06	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-601	ELECTRICAL ONE-LINE DIAGRAM
EI-701	ELECTRICAL INSTRUMENTATION PANEL

PREPARED FOR:

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

PREPARED BY:

iiná bá, Inc.
www.iinaba.com
1812 Schofield Lane Farmington, NM 87401
P.O. BOX 2606 Farmington, NM 87499

Registered Professional Engineer (Civil)
CERTIFICATE NO.
50207
ROBERT J RUNGE II
Date Signed
ARIZONA U.S.A.
EXPIRES: _____

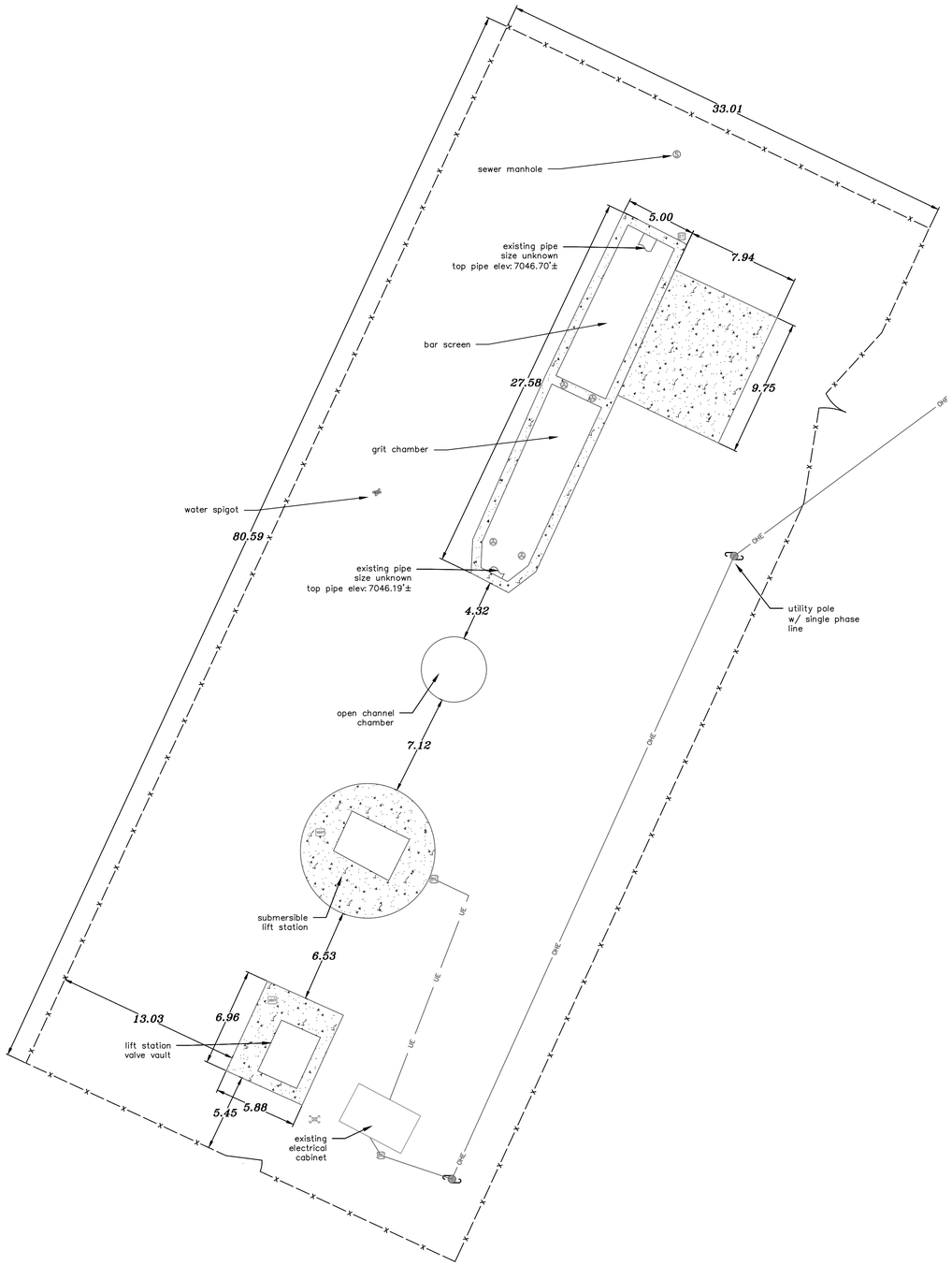
IBI #20-050-02

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
- SCO — SEWER CLEANOUT
- WV — 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 NEW MEXICO STATE PLANE COORDINATES (WEST ZONE) NAD 83 BASED ON GPS OBSERVATIONS.
4. ELEVATIONS AS SHOWN ARE REFERENCED TO NAVD 88.



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Farmington, NM 87499

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

PROJECT:
REFURBISHMENT & UPGRADE OF EXISTING LIFT STATION
35°54'12.32"N, 109°02'33.21"W
NAVAJO, NEW MEXICO, 87238

ONLY VALID WITH ORIGINAL STAMP

REVISIONS:

REV	DESCRIPTION	DATE	DFTR	CHKR

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

5 2.5 0 5

DRAWING TITLE:
EXISTING FACILITY PLAN

DRAWING NUMBER:
G01

LEGEND

- TRACT LIMITS (SEE NOTE 4)
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NORTH

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PROJECT NUMBER:	20-050-02
ENGINEER:	XXX
DRAWING SIZE:	ANSI D
DRAWING SCALE:	NTS

0 0 0 0

DRAWING TITLE:
EXISTING CONDITIONS SITE LAYOUT

DRAWING NUMBER:
G-02

BILL OF MATERIALS

DWG	ITEM NUMBER	QUANTITY	PART NUMBER	MANUFACTURER	DESCRIPTION
M-02	21	1	30005-0008-DI	JWC	MUFFIN MONSTER
M-02	-	1	PC 2200	JWC	CONTROLLER ASSEMBLY
M-02	22	1	(INCLUDED)-	JWC	CUSTOM FRAME ASSEMBLY
M-02	23	1	(INCLUDED)	JWC	CUSTOM GUIDE RAIL ASSEMBLY
M-02	24	1	(INCLUDED)	JWC	CUSTOM LIFTING BAIL ASSEMBLY
M-02		3	(INCLUDED)	JWC	O&M MANUALS (HARD COPY)
M-02	25	1	32537R	JWC	FRAME WALL MOUNT
M-02	26	1	32523	JWC	GUIDE PLATE
M-02	27	8	30249	JWC	HHCS 3/8-16 X ¾ SST
M-02	28	8	30140	JWC	LOCKWASHERS SPLIT 3/8 SST
S-01	29	1	D3A24E	HALLIDAY PRODUCTS	PORTABLE HOIST – 1,500 LB LIMIT; SST
S-01	30	1	SERIES D3S	HALLIDAY PRODUCTS	HOIST SOCKET; LINED

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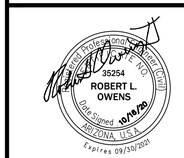
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DRAWING TITLE:

BILL OF MATERIALS

DRAWING NUMBER:

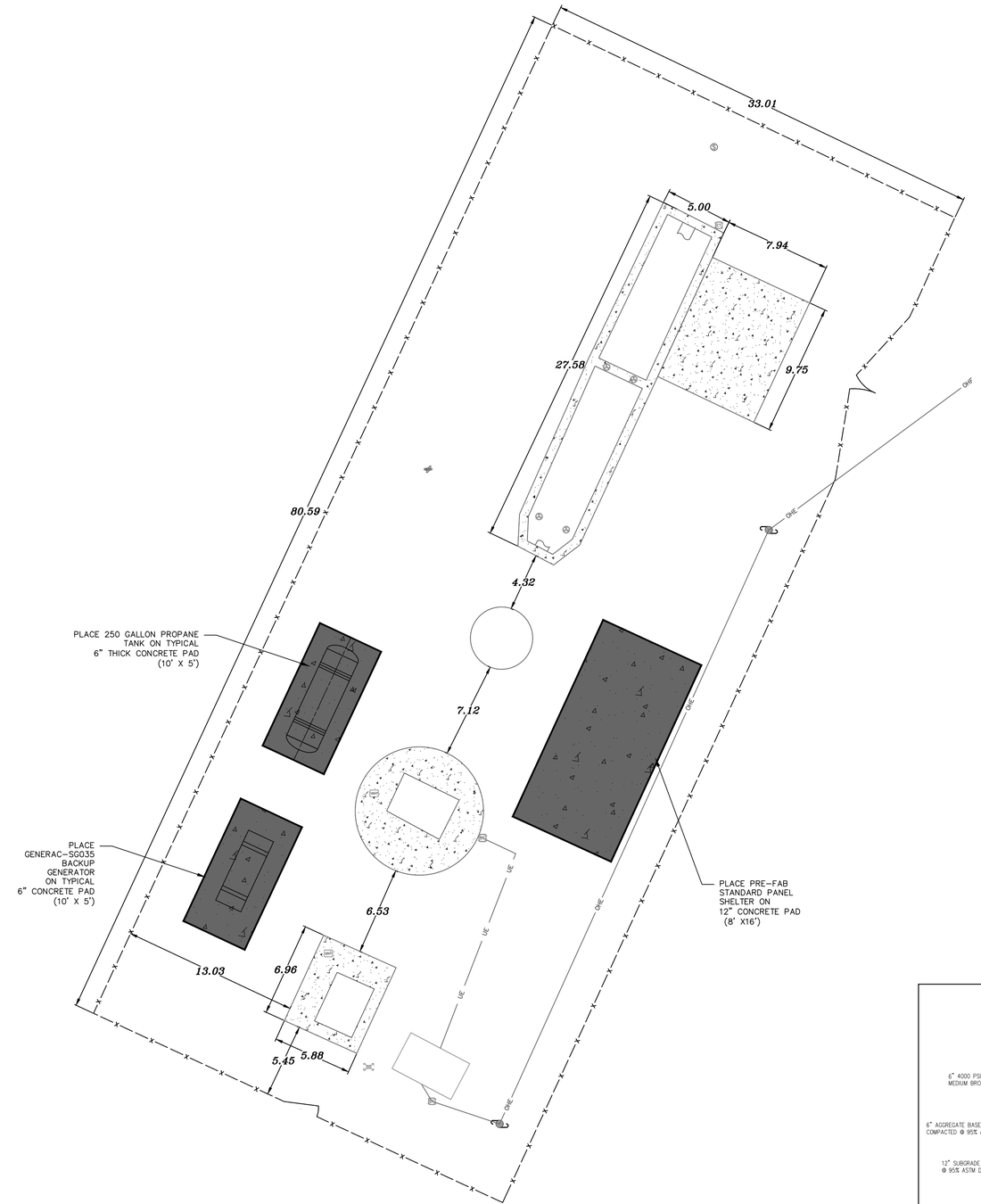
G-03

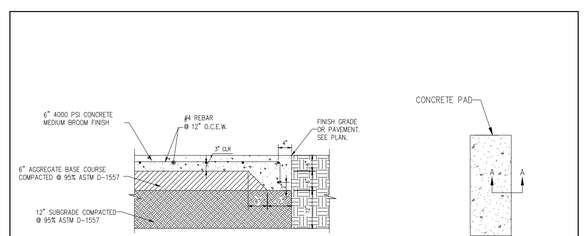
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- WATER SPIGOT
- ANTENNA
- ELECTRIC JUNCTION BOX
- VENT PIPE
- GRAVEL SURFACE
- CONCRETE SURFACE
- PROPOSED CONCRETE SURFACE

NOTES:

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CONCRETE PAD
NTS

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DRAWING SCALE:	1" = 5'

5 2.5 0 5

DRAWING TITLE:
SITE PLAN

DRAWING NUMBER:
G-04

NAVAJO 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 dialectric 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

b. Service factor of 1.15 or better.
c. Class F insulation, Class B temperature rise.
d. Rated for 6 starts per hour.

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

SUBMITTALS

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.

HP	900 RPM	1,200 RPM	1,800 RPM	3,600 RPM
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
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

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.
   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.

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.

HP	900 RPM	1,200 RPM	1,800 RPM	3,600 RPM
250	95.0	95.4	95.8	95.8
300-500	95.0	95.8	95.8	95.8

B. Probable motor horsepower ratings have been specified or shown on the Drawings. Changes from the specified horsepower may be accepted, if necessary to assure that motors do not exceed their maximum permissible loading, as defined above, under normal operation. Motor horsepowers 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

C. Motors used with adjustable frequency drives shall have inverter duty complying with NEMA MG-1, Section IV, Part 31.

NAMEPLATE

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. Regreasable 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.

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

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.

COMMINUTOR/MACERATOR

iiná bá, Inc.
www.iinaba.com
1812 Schofield Lane
Farmington, NM 87401
P.O. BOX 2606
Farmington, NM 87499

CLIENT:
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Ft. Defiance, AZ, 86504

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NAVAJO, NEW MEXICO, 87238

Registered Professional Engineer (Civil) STATE OF NEW MEXICO 35254 ROBERT L. OWENS Date Signed 10/15/20 ARIZONA, U.S.A. Expires 09/30/2021

REVISIONS:

REV	DESCRIPTION	DATE	DFTR	CHKR

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

DRAWING TITLE:
MECHANICAL SPECIFICATIONS

DRAWING NUMBER:
G-05

SECTION 11330
MUFFIN MONSTER®
IN-CHANNEL GRINDER – SERIES 30005
2" hex/Wipes Ready/XPNV Immersible Electric Motor/PC2200 Controller

PART 1 - GENERAL

1.1 SCOPE OF WORK

A. The Contractor shall furnish, install, place into satisfactory operation, and warrant the Wipes Ready 30005 for shredding municipal wastewater solids, as shown on the Plans and described by the Specifications.

B. All items detailed in this section shall be provided by the same manufacturer.

1.2 REFERENCE STANDARDS

A. Equipment shall, as applicable, meet the requirements of the following industry standards:

1. American Society for Testing and Materials (ASTM) A36 Carbon Steel Plate
2. American Society for Testing and Materials (ASTM) A536-84 Ductile Iron Castings
3. American Iron and Steel Institute (AISI) 4130 Heat Treated Alloy Steel
4. American Iron and Steel Institute (AISI) 4140 Heat Treated Alloy Steel
5. American Iron and Steel Institute (AISI) 8620 Heat Treated Alloy Steel
6. American Iron and Steel Institute (AISI) 303 Stainless Steel
7. American Iron and Steel Institute (AISI) 304 Stainless Steel
8. American Iron and Steel Institute (AISI) 316 Stainless Steel
9. American Iron and Steel Institute (AISI) 17-4 PH Stainless Steel
10. Society of Automotive Engineers (SAE) 660 Bearing Bronze

B. Controllers shall, as applicable, meet the requirements of the following Regulatory Agencies:

1. National Electrical Manufacturer's Association (NEMA) Standards
2. National Electrical Code (NEC)
3. Underwriters Laboratory (UL and cUL)
4. International Electrotechnical Commission (IEC)

1.3 QUALITY ASSURANCE

A. Identification

1. Equipment shall be identified with a corrosion-resistant nameplate affixed in a conspicuous location.

2. Nameplate information shall include manufacturer's name and address, equipment model number, and serial number.

A. Manufacturer

1. Supplier shall be ISO9001 certified and have a minimum 40 years experience as a manufacturer of municipal waste water equipment and a minimum 10000 prior installations of similar equipment.

2. Supplier shall, at request, provide a list of reference sites of similar equipment for verification by the Engineer or Owner's representative.

3. Supplier shall conduct factory testing and verification of equipment prior to shipment.

4. Supplier shall have factory-owned bi-coastal service centers in USA.

5. Supplier shall have an exchange/repair service program.

1.4 SUBMITTALS

A. Approval Documents

Supplier shall submit approval documents in .pdf format. Submittals shall include equipment descriptions, functional descriptions, dimensional and assembly drawings, catalog data, job specific drawings, manufacturer's instructions, and recommended spares.

B. Operation and Maintenance Manuals

The supplier shall submit one (1) copy of a suitable operation & maintenance manual. An electronic version shall be supplied to create additional copies. The manuals shall include equipment descriptions, operating instructions, drawings, troubleshooting techniques, a recommended maintenance schedule, recommended lubricants, and recommended spares.

C. Warranty Documentation

The supplier shall submit a warranty statement clearly identifying the scope and term of the warranty.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Packaging and Shipment

1. Equipment shall be packaged in containers or on skids suitable for normal shipping, handling, and storage.

2. Equipment shall be protected from rain, snow, impact and abrasion while in the possession of the carrier.

B. Delivery and Acceptance Requirements

Contractor shall review the contents of the shipment at time of delivery and promptly notify the carrier and supplier of any discrepancies.

C. Storage and Handling Requirements

1. Equipment shall remain in the packaging provided by the supplier until it is installed.

2. Equipment shall be stored in a dry environment between 40° F (4.5° C) and 100° F (37.8° C).

D. Packaging Waste Management

Contractor shall be responsible for discarding all packaging materials in an environmentally-friendly manner and in accordance with local regulations.

1.6 WARRANTY

Manufacturer's standard 12-month limited warranty shall be provided with the equipment.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Equipment shall be in accordance with these plans and specifications and shall be supplied by one of the following manufacturers:

1. JWC Environmental, LLC, 290 Paularino Ave., Costa Mesa, CA 92626; Tel: 800-331-2277

Muffin Monster Grinder Model 30005, Wipes Ready
Motor Controller Model PC2200

2. Approved equal.

B. Manufacturers requesting to be selected as an approved equal shall satisfy the requirements of the following section "Pre-Approval of Alternate Equipment."

2.2 PRE-APPROVAL OF ALTERNATE EQUIPMENT

A. Manufacturers requesting to be selected as an approved equal shall either: (i) perform a pilot test at the facility, or; (ii) coordinate a site visit to allow the Engineer and owner the opportunity to witness the performance of the proposed equipment. This task shall be completed a minimum of 10 days prior to the bid. All expenses associated with (i) or (ii) above shall be paid for by the submitting manufacturer.

B. Manufacturers requesting to be selected as an approved equal shall also submit certified documentation showing compliance with these specifications a minimum of ten (10) days prior to bid opening. Selected equipment manufacturers shall be added to the list of approved manufacturers at engineer's discretion.

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2.3 PERFORMANCE REQUIREMENTS

A. General

Grinder shall reduce or shred influent solids for protection of downstream equipment.

B. Design Summary

1.	Number of grinders	1
2.	Number of motor controllers	1
3.	Environment rating for grinders	Hazardous, subject to flooding
4.	Environment rating for motor controllers	Non-hazardous
5.	Supply power characteristics	460 volt / 3 phase / 60 Hertz
6.	Nominal stack height	__" (___ mm)
7.	Minimum liquid handling capacity per grinder	___ GPM (_._ l/s)
8.	Maximum head drop across cutter stack	___" (___ mm) at minimum capacity
9.	Cutter type	Serrated 17-tooth
10.	Spacer type	Knurled
11.	Side rail type	Delta-P high flow, high capture
12.	Shaft seal type	Mechanical, Tungsten Carbide
13.	Seal maximum pressure	90 psi (620 kPa)
14.	Speed reducer type and ratio	Cycloidal, 29:1
15.	Installed horsepower	3 hp (2.2 kW)
16.	Motor type	XPNV, Immersible
17.	Motor service factor	1.15
18.	Minimum motor efficiency (at full load)	88.8%
19.	Minimum motor power factor (at full load)	65.0%
20.	Minimum peak shaft torque	5,185 lb-in/hp (786 Nm/kW)
21.	Minimum peak force at cutter tip	2,202 lb/hp (13,134 N/kW)

2.4 FRAME AND SUPPORTS

A. General

Frame and/or supports shall provide a method for properly securing the grinder in an open channel or wet well. The frame shall allow installation or removal without any disassembly of the frame or grinder.

B. Components

1. Frame shall be fabricated of 304 stainless steel.

2. Frame shall provide proper support and interface to prevent unwanted bypass.

2.5 GRINDER

A. General

Grinder shall be of two-shafted design consisting of individual cutters and spacers driven by hexagonal shafts. The cutters shall actively grab and pull material into the stack for shredding. Grinder shall have upper and lower end housings to retain shaft support bearings and seals. Side rails shall provide structural rigidity while optimizing throughput and capture. Grinder shall have a motor and speed reducer to drive the cutter shafts. The equipment shall operate at low speed with a maximum cutter shaft speed of 60 rpm and shall be specifically-designed for capturing and shredding wipes.

B. Components

1. Cutters and Spacers

a. Cutting stack shall be of nominal height listed in Performance Requirements.

b. Cutting stack shall consist of interleaved cutters and spacers.

c. Cutters and spacers shall be individual disks constructed of heat treated alloy steel.

d. Cutters shall be heat treated to 45-53 HRc.

e. Spacers shall be heat treated to 34-53 HRc

f. Cutters shall have 17 teeth and be 0.438" (11.13 mm) thick.

g. Cutters shall have radial serrations on the leading edges designed to perforate material as it passes between the cutter and adjacent spacer.

h. Cutter tooth height shall be not greater than ½-inch (13 mm) above the root diameter of the cutter.

i. Cutter outside diameter shall not exceed a maximum 4.73" (120.14 mm).

j. Cutter thickness tolerance shall be +.000/-.001" (+.000/-.025 mm). Spacer thickness tolerance shall be +.001/-.000" (+.025/-.000 mm).

k. Spacers shall have a knurled outside diameter designed to aid in tearing of material as it passes through the cutter stack.

l. Spacers shall be 0.446" (11.33 mm) thick.

m. Cutter to cutter clearance shall be a maximum of 0.010" (0.25 mm).

n. Clearance between any cutter tip and adjacent spacer shall be nominal 0.015" (0.38 mm).

2. Shafts

a. Shafts shall be hexagonal, 2" (50.8 mm) across flats.

b. Shafts shall be of heat treated 4140 alloy steel with a minimum tensile strength of 149,000 psi (1,027 kPa).

c. Shaft hardness shall be 38-42 Rockwell C.

3. Intermediate Shaft Yoke (as applicable)

a. Intermediate shaft yokes shall provide radial support to the shafts during severe grinding demands.

b. Intermediate shaft yokes shall be constructed of 304 stainless steel, 660 bronze, and 17-4PH Stainless steel.

a. Intermediate shaft yokes shall be factory lubricated with high temperature marine grade grease.

b. Grease fittings shall be provided on intermediate shaft yokes for periodic maintenance.

c. Intermediate shaft yokes shall only be supplied on cutter stacks of 32-inches (813mm) and taller.

4. Side Rails

a. Side rails shall be constructed of ASTM A536 ductile iron.

b. Cutter side rail shall have evenly-spaced horizontal fingers. Fingers shall be designed to create a pressure differential towards the center of the grinder, directing solids into the cutter stack, while at the same time minimizing overall pressure drop through the grinder.

c. Clearance between cutter side rail and adjacent cutters shall not exceed 0.100" (2.54 mm).

5. Shaft Bearings and Seals

a. Radial and axial loads shall be borne by sealed, oversized, deep-groove ball bearings.

b. Shaft seal type shall be mechanical.

c. Each bearing and seal arrangement shall be incorporated into a cartridge-style housing.

d. Cutter shafts shall be supported on both ends. Cantilever-style arrangements shall not be permitted.

e. Dynamic and rotating seal faces shall be Tungsten Carbide with 6% Nickel binder.

f. Seal cartridges shall be rated to a maximum pressure of 90 psi (620 kPa).

g. O-rings shall be of BUNA-N.

h. Seal cartridges shall not require flushing.

i. Seals shall be rated to operate wet or dry.

6. Housings and Covers

d. Housings and top cover shall be of ASTM A536 ductile iron. Bottom cover shall be of A36 carbon steel.

e. End housings shall have integral bushing deflectors to guide solids away from seal cartridges.

8. Transfer Gears

a. Transfer gears shall be of involute profile and fabricated from heat treated alloy steel.

b. Transfer gear tooth design, thickness and hardness shall be suitable to transfer torque between shafts up to the rated breakdown torque of the motor.

c. The interface between transfer gears shall be factory lubricated with grease to minimize wear.

d. The transfer gear ratio shall be such that the ratio of cutter tip speed of the low speed shaft to cutter tip speed of the high speed shaft shall be greater than 0.90 and less than 1.00 to promote tearing of material as it passes through the cutter stack and at the same time facilitate cleanout of material from between the cutters.

9. Low Speed Coupling

a. Low speed coupling shall be a 3-jaw type.

b. The 3-jaw halves shall be of hardened 4140 alloy steel.

c. Each low speed coupling half shall be encapsulated on its mating shaft to facilitate proper engagement of coupling lobes (1/16" – 1/8").

d. The interface between low speed coupling halves shall be factory lubricated with grease to minimize wear.

7. Speed Reducer

a. Speed reducer shall be manufactured by Sumitomo Machinery Corporation of America.

b. Speed reducer shall be a cycloidal type.

c. Speed reduction ratio shall be 29:1.

d. Speed reducer shall be grease lubricated.

8. High Speed Coupling

a. High speed coupling shall be a 3-jaw type with elastomer spider.

b. The 3-jaw halves shall be of sintered iron.

c. The spider shall be of BUNA-N.

9. Motor

a. Motor shall be manufactured by Baldor Electric Company.

b. Motor shall have characteristics as listed in Performance Requirements.

12. Lifting Brackets

a. Grinder shall be fitted with two (2) lifting rings.

2.6 MOTOR CONTROLLER

A. Description

Controller shall provide programmable operation of the grinder system. Controller shall have switches, indicator lights, and other control devices.

Controller shall be designed to suit the supply power and motor characteristics listed in Performance Requirements.

B. Components

1. Enclosure

a. Enclosure shall be fiberglass reinforced plastic, NEMA 4X.

b. Enclosure shall house motor starter, PLC, and control devices.

2. Selector switches

a. Selector switches shall be 22 mm, rated equal to or better than the enclosure.

b. Grinder selector switch shall be three-position and indicate On-Off/Reset-Remote.

3. Pilot Lights

a. Lights shall be 22 mm, LED (pilot lamp), rated equal or better than the enclosure.

b. Lights shall indicate POWER ON, grinder RUN, grinder JAMMED and MOTOR FAULT.

4. Motor Starter

a. Starter shall be IEC, full voltage, reversing.

b. Contactors shall have 120-volt operating coils.

c. Overload relays shall be adjustable and sized to full load amperes (FLA) of the motor.

5. Control Power Transformer

a. Control power transformer shall produce 120-volt AC power from the supply power. Transformer shall be sized and fused in accordance with code to accommodate the control power requirements.

6. Programmable Logic Controller

a. PLC shall be a Panasonic FPX.

7. Current Transducer

a. Current transducer shall be a discrete output type.

b. Current transducer shall have adjustable set point from 1-135A with 200 ms or faster response time.

C. Operation

1. Grinder control shall be in accordance with the setting of the On-Off/Reset-Remote selector switch.

a. In the OFF/RESET position the grinder shall not run. Motor controller faults shall be cleared.

b. In the ON position, the grinder shall run forward.

c. In the REMOTE position, the grinder shall operate as controlled by a remote start/stop dry contact.

2. When an obstruction jams the grinder, the controller shall stop the grinder and reverse the rotation to clear the obstruction. If the obstruction is cleared, the controller shall return the grinder to normal operation. If three (3) reverses occur within a 30 second interval, the controller shall stop the grinder motor and activate the grinder FAIL indicator and relay.

3. When a motor overload or motor over-temperature condition occurs, the motor shall be de-energized, the 'MOTOR FAULT' indicator lamp shall be illuminated and the FAIL contact shall be closed.

4. When a power failure occurs while the system is operating, the system shall return to normal operation when power is restored.

5. When a power failure occurs while the grinder is in a fail condition, the system shall return to a fail state when power is restored. The fail state shall not be cleared until reset.

6. Reset of the grinder shall be accomplished from the controller only.

2.7 FINISHES

A. Paint Coatings (Ferrous Materials)

Ferrous metal surfaces shall be prepared to SSPC-SP6 (Commercial Blast Cleaning) and coated with minimum 6-8 mils TDFT (total dry film thickness) paint of type and color listed in Performance Requirements.

B. Paint Coatings (Previously-Coated Components)

Previously coated components (motors, speed reducers, etc.) shall be prepared to SSPC-SP1 (Solvent Cleaning) and SSPC-SP2 (Hand Tool Cleaning) and coated with minimum 6-8 mils TDFT (total dry film thickness) paint of type and color listed in Performance Requirements.

PART 3 - EXECUTION

3.1 INSTALLATION

The Contractor shall coordinate installation of the equipment in accordance with the manufacturer's installation instructions, drawings and related specification sections, and in accordance with all OSHA, local, state, and federal codes and regulations.

3.2 SYSTEM START-UP

The equipment supplier shall provide the services of a factory or manufacturer's representative for a minimum of one (1) day to inspect the equipment for proper installation, apply power for the first time and check for proper motor rotation, oversee the initial introduction of material into the system and confirm the equipment operates as intended. Representative shall also provide services as detailed in Training below.

3.3 TRAINING

Field training shall be provided for operations, maintenance and supervisory staff members. Field instruction shall cover key components of the equipment, operating and maintenance requirements and troubleshooting techniques.

END OF SECTION

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CLIENT:

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

PROJECT:

REFURBISHMENT & UPGRADE OF EXISTING LIFT STATION

35°54'12.32"N, 109°02'33.21"W
NAVAJO, NEW MEXICO, 87238

Registered Professional Engineer
35254
ROBERT L. OWENS
Date Signed 10/01/20
ARIZONA, U.S.A.
Expires 09/30/2021

REVISIONS:

REV	DESCRIPTION	DATE	DFTR	CHKR

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

5 2.5 0 5

DRAWING TITLE:

MECHANICAL SPECIFICATIONS

DRAWING NUMBER:

G-06

INSTRUMENT SYMBOL IDENTIFIERS

J-3 J-4, J-5
J-1 / J-2
J-6

J-1: IDENTIFICATION LETTERS (SEE TABLE BELOW)
J-2: LOOP NUMBER
J-3: VENDOR DESIGNATOR (NOTE 3)
J-4: FUNCTION BLOCK (SEE TABLE BELOW)
J-5: PANEL NUMBER
J-6: HANDSWITCH DESIGNATOR (SEE BELOW)

	FIRST LETTER		SUCCEEDING LETTERS		
	MEASURED OR INITIATING VARIABLE	MODIFIER	READOUT OR PASSIVE FUNCTION	OUTPUT FUNCTION	MODIFIER
A	ANALYSIS		ALARM		
B	BURNER, COMBUSTION		USER'S CHOICE	USER'S CHOICE	USER'S CHOICE
C	USER'S CHOICE			CONTROL	CLOSED
D	DENSITY	DIFFERENTIAL	DAMPER		
E	VOLTAGE		SENSOR (PRIMARY ELEMENT)		
F	FLOW RATE	RATIO (FRACTION)			
G	USER'S CHOICE		GLASS, VIEWING DEVICE		
H	HAND				HIGH
I	CURRENT (ELECTRICAL)		INDICATE		
J	POWER	SCAN			
K	TIME, TIME SCHEDULE	TIME RATE OF CHANGE		CONTROL STATION	
L	LEVEL		LIGHT		LOW
M	MOISTURE	MOMENTARY			MIDDLE, INTERMEDIATE
N	USER'S CHOICE		USER'S CHOICE	USER'S CHOICE	USER'S CHOICE
O	USER'S CHOICE		ORIFICE, RESTRICTION		OPEN
P	PRESSURE, VACUUM		POINT (TEST) CONNECTION		
Q	QUANTITY	INTEGRATE, TOTALIZE			
R	RADIATION		RECORD		
S	SPEED, FREQUENCY	SAFETY	SWITCH		
T	TEMPERATURE			TRANSMIT	
U	MULTI VARIABLE		MULTIFUNCTION	MULTIFUNCTION	MULTIFUNCTION
V	VIBRATION, MECHANICAL ANALYSIS			VALVE, DAMPER, OR LOUVER	
W	WEIGHT, FORCE		WELL		
X	UNCLASSIFIED	X AXIS	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED
Y	EVENT, STATE, PRESENCE	Y AXIS		RELAY, COMPUTE, CONVERT	
Z	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
- DIFFERENCE
- INTEGRAL
- DERIVATIVE
- MULTIPLYING
- DIVIDING
- CONVERT: * E – VOLTAGE, I – CURRENT, P – PNEUMATIC, A – ANALOG, B – BINARY, H – HYDRAULIC, O – ELECTROMAGNETIC, SONIC, R – RESISTANCE (ELECT), D – DIGITAL
- ROOT EXTRACTION
- SQUARE ROOT
- EXPONENTIAL
- HIGH SELECTING
- LOW SELECTING
- BIAS
- NONLINEAR OR UNSPECIFIED FUNCTION

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
1–0	ON–OFF		

INSTRUMENT SERVICES

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

PLC INPUT/OUTPUT

- DISCRETE INPUT
- DISCRETE OUTPUT
- ANALOG INPUT
- 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 (M)
- SONIC FLOWMETER

LINES

- MAIN PROCESS
- SECONDARY PROCESS
- DOUBLE CONTAINED PIPE
- REFERENCES TO OTHER SHEET (12/B)
- LINE CONTINUATION
- DRAWING REFERENCE
- PIPE SYSTEM (24" BW)
- PIPE SIZE IN INCHES
- PNEUMATIC
- ELECTRICAL SIGNAL ANALOG
- ELECTRICAL SIGNAL DISCRETE
- HYDRAULIC
- CAPILLARY TUBE
- SOFTWARE OR DATA LINK
- ELECTROMAGNETIC OR SONIC (GUIDED)

MECHANICAL OR ELECTRICAL

- CONNECTED
- NOT CONNECTED
- 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 LC = LOCKED CLOSED FO = FAIL OPEN 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
- (M) MOTOR
- CYLINDER OPERATOR
- (S) SOLENOID
- (SV) 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
- PERISTALTIC PUMP
- (M) MIXER
- TURBINE 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
- * AV – AIR VALVE F – FILTER T – TRAP FH – FIRE HYDRANT
- WATER

NOTES

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

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Farmington, NM 87499

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

PROJECT:
REFURBISHMENT & UPGRADE OF EXISTING LIFT STATION
35°54'12.32"N, 109°02'33.21"W
NAVAJO, NEW MEXICO, 87238



REVISIONS:

REV	DESCRIPTION	DATE	DFTR	CHKR

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

5 2.5 0 5

DRAWING TITLE:
INSTRUMENTATION AND CONTROL STANDARDS

DRAWING NUMBER:
D-01

LEGEND

SCADA

MCC

LOCAL

Influent Level LI
Level HI LH
Level LO LL
Auto Call YC
Run YN
Alarm YNA
Auto YN
Stop YC
Call YC
Auto YN
Run YN
Alarm YNA
Low Level LL
High Level LH

LAH XXX
KQC XXX
LAL XXX
NOTE 2

JS XXX
NOTE 4

YS XXX
NOTE 3

SIC XXX
SIC XXX

HS
HS

LI XXX
NOTE 1

LIT

M

COLLECTION SYSTEM

SCREEN (MANUAL)

OPEN CHANNEL FLOW MEASUREMENT

COMM MAC.

M TSH

TSH M

LH

LL

TO STAGE LAGOON

DISCHARGE VALVE VAULT

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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NAVAJO, NEW MEXICO, 87238

Certified Professional Engineer
35254
ROBERT L. OWENS
Date Signed 10/16/20
ARIZONA, U.S.A.
Expires 09/30/2021

ONLY VALID WITH ORIGINAL STAMP

REVISIONS:

REV	DESCRIPTION	DATE	DFTR	CHKR

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

DRAWING TITLE:
PROCESS AND INSTRUMENTATION DIAGRAM

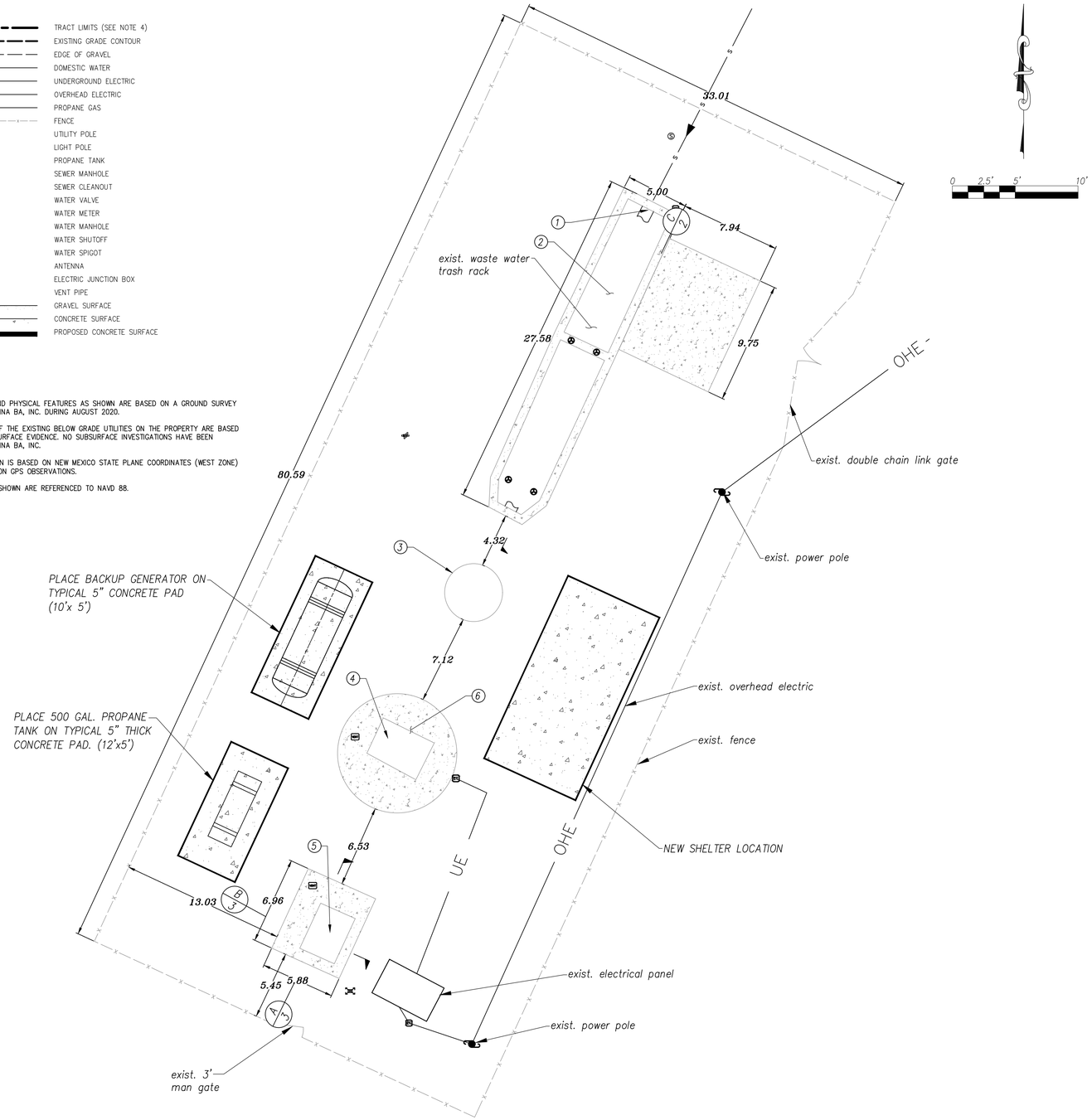
DRAWING NUMBER:
D-02

LEGEND

- TRACT LIMITS (SEE NOTE 4)
- EXISTING GRADE CONTOUR
- EDGE OF GRAVEL
- W — DOMESTIC WATER
- UGE — UNDERGROUND ELECTRIC
- OHE — OVERHEAD ELECTRIC
- G — PROPANE GAS
- FENCE
- UTILITY POLE
- LIGHT POLE
- PROPANE TANK
- SEWER MANHOLE
- SEWER CLEANOUT
- WV — WATER VALVE
- WATER METER
- WATER MANHOLE
- WATER SHUTOFF
- WATER SPIGOT
- ANTENNA
- ELECTRIC JUNCTION BOX
- VENT PIPE
- GRAVEL SURFACE
- CONCRETE SURFACE
- PROPOSED 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 NEW MEXICO STATE PLANE COORDINATES (WEST ZONE) NAD 83 BASED ON GPS OBSERVATIONS.
4. ELEVATIONS AS SHOWN ARE REFERENCED TO NAVD 88.



SITE PLAN

EXIST. COMPONENTS

No.	Description
01	inlet sewer pipe
02	manually clean trash rack
03	flume level measurement and channel restriction
04	wet well – pumps (not shown)
05	valve vault

NEW COMPONENTS

No.	Description
06	COMMINUTOR / MACERATOR

iiná bá, Inc.
www.iinaba.com

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
35°54'12.32"N, 109°02'33.21"W
NAVAJO, NEW MEXICO, 87238

Registered Professional Engineer (Civil) State of Arizona
35254
ROBERT L. OWENS
Date Examined 10/15/20
ARIZONA, U.S.A.
Expires 09/30/2021

ONLY VALID WITH ORIGINAL STAMP

REVISIONS:

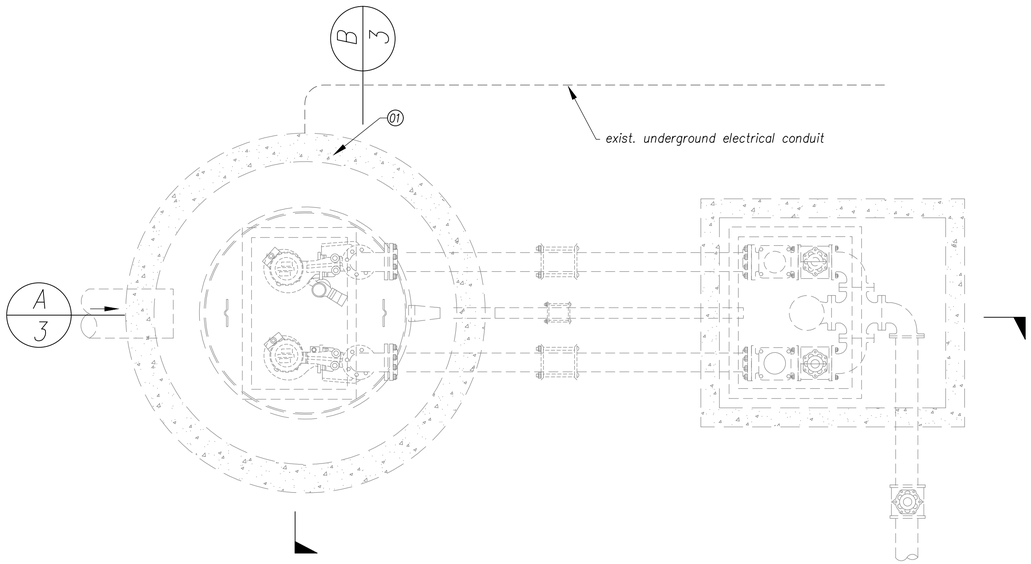
REV	DESCRIPTION	DATE	DFTR	CHKR

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

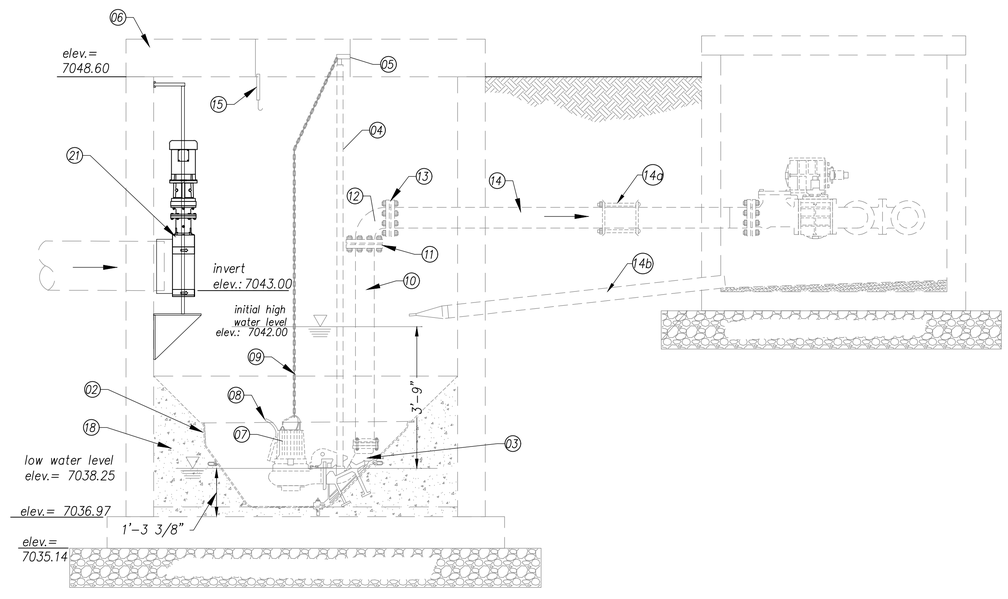
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DRAWING TITLE:
MECHANICAL PLAN

DRAWING NUMBER:
M-01



LIFT STATION / VALVE VAULT
N.T.S.



SECTION "A"
N.T.S.

flygt NP3102.180 pump specifications:
365 gpm @ 21' tdh
full load amperage: 6.6 amps
5 hp, 460 v/ 3 phase / 60 hz

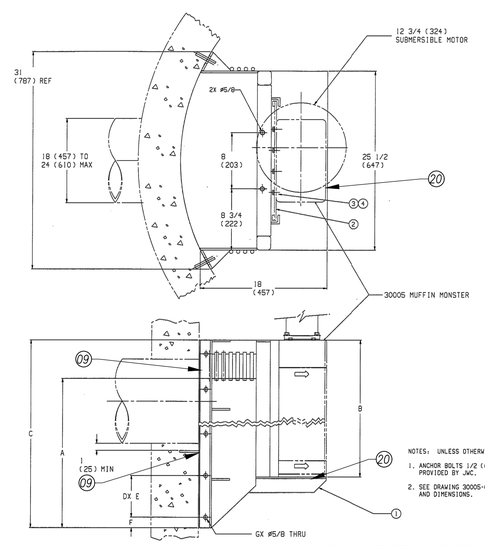
EXIST. LIFT STATION MATERIALS

No.	Quantity	Description
01	1	8' i.d. concrete pre-cast manhole
02	1	flygt top 150 basin
03	2	flygt 4" top basin discharge elbow w/ anchoring kit
04	4	2" guide bar, cut to length at assembly
05	2	guide bar bracket, bolted to access hatch
06	1	8' I.D. concrete manhole cover w/ flygt fle-8aosh hatch cast in place
07	2	Pump, Flygt NP3102.80
08	2	power cable
09	2	lifting chain
10	2	4" d.i. pipe (approx. 5' each)
11	2	4" d.i. flange adaptor
12	2	6" x 4" d.i. flange 90° reducing elbow
13	2	6" d.i. field flange adaptor
14	2	6" d.i. pipe (approx 11' each)
14a	2	6" d.i. transition coupling
14b	2'-8"	3" pvc/dwv valve vault drain
15	1	cable holder
16	1	flygt mix flush valve w/hardware to connect to pump volute
17	1	duplex pump control panel
18	As Needed	concrete
19	1	submersible pressure transducer pipe
20	2	liquid level sensors (mechanical switch back-up)

NEW LIFT STATION MATERIALS

No.	Quantity	Description
21	1	NEW COMMINUTOR / MACERATOR
22	1	CUSTOM FRAME ASSEMBLY
23	1	CUSTOM GUIDE RAIL ASSEMBLY
24	1	CUSTOM LIFTING BAIL ASSEMBLY
25	1	FRAME WALL MOUNT
26	1	GUIDE PLATE
27	8	HHCS 3/8-16 X 3/4 SST
28	8	LOCK WASHERS SPIT 3/8 SST
29	1	PORTABLE HOIST – 1,500 LB LIMIT; SST
30	1	HOIST SOCKET; LINED

"ALL STAINLESS STEEL FOR STRUCTURAL ITEMS SHALL BE 316 TYPE"



COMMINTOR MACERATOR DETAIL
Not to Scale

NOTES: UNLESS OTHERWISE SPECIFIED

1. ANCHOR BOLTS 1/2 (6) X 3 3/4 (95) MIN NOT PROVIDED BY JWC.
2. SEE DRAWING 30005-CD FOR GRINDER DETAILS AND DIMENSIONS.

REVISIONS			
ZONE | LTR	DESCRIPTION	DATE	APPROVED
ALL REV. INITIAL RELEASE		09-01-00	J-30da CS
02 | A	COLUMN C was .127mm is .67mm	09-08-04	J-31ma RTC

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TAB BLOCK							
MODEL NO.	DIMENSIONS & QUANTITIES						
	A	B	C	D	E	F	G
30005-8	20 3/4 (527)	19 1/2 (495)	26 3/4 (679)	8	5 15/16 (151)	1 1/2 (38)	10
30005-12	24 7/8 (632)	23 5/8 (600)	30 7/8 (784)	8	6 13/16 (173)	2 (51)	10
30005-18	30 3/4 (781)	29 1/2 (749)	36 3/4 (933)	8	8 7/16 (214)	1 1/2 (38)	10
30005-24	36 1/2 (927)	35 1/4 (895)	42 1/2 (1080)	8	9 3/4 (248)	1 1/2 (38)	10
30005-32	44 1/4 (1124)	43 (1092)	50 1/4 (1276)	10	9 3/8 (238)	1 1/2 (38)	12
30005-40	52 1/4 (1327)	51 (1296)	58 1/4 (1480)	10	10 7/8 (276)	2 1/2 (64)	12
30005-50	62 1/4 (1581)	61 (1549)	68 1/4 (1734)	12	10 11/16 (271)	2 1/2 (64)	14
30005-60	72 5/8 (1845)	71 3/8 (1813)	78 5/8 (1997)	14	10 11/16 (271)	2 1/2 (64)	16

CONTROLLED

ITEM	QTY	PART NO.	DESCRIPTION	SPECIFY/OTHER ID# MATERIAL
4	8	30140	LOCKWASHER, SPLIT 3/8	SST
3	8	30249	HHCS 3/8-16 X 3/4	SST
2	1	32523	GUIDE PLATE	
1	1	32537R	FRAME-ROUND WALL MOUNT	

PARTS LIST

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON X PLACES DECIMALS ANGLES
FRACTIONS ± 1/64 ± .030 ±1°

MATERIAL: A36 STL, 304 SST, 316 SST

FINISH:

DO NOT SCALE DRAWING

CONTRACT NO.

APPROVALS: DRAWN S. ANDERSON 09-01-00; ENGINEER CHRISTOPHER GLADBURN 09-08-04

JWC ENVIRONMENTAL 8860 South Kenmore, Santa Ana, California 92707

FRAME-INSTALLATION
MODEL 30005 WITH GUIDE PLATE
#18"-24#" INFLUENT PIPE

SIZE: D | CAGE CODE: 53242 | DRAWING NO.: 32537R-CD | REVISION: A

SCALE: 1/4 | SHEET 1 OF 1

iiná bá, Inc.
www.iinaba.com

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REVISIONS:

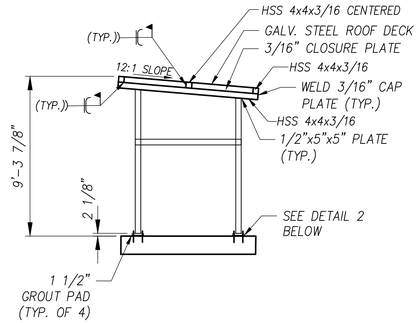
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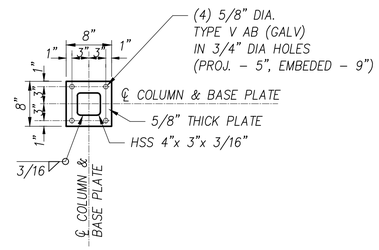
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DRAWING TITLE:
MECHANICAL SECTIONS

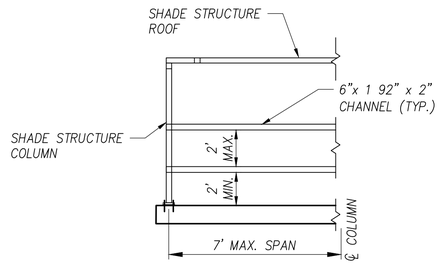
DRAWING NUMBER:
M-02



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



2 POST BASE 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.

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

NOTE:

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

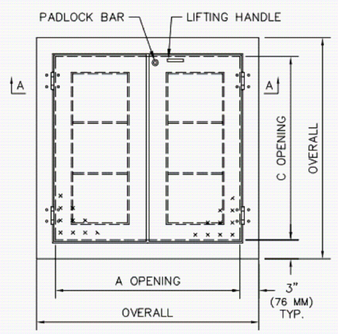
SERIES S2R ACCESS DOOR

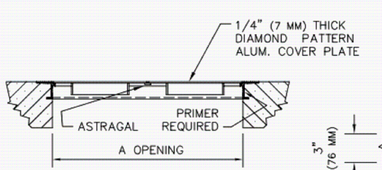
STANDARD FEATURES:

- 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 (1464 KG. PER SQ. METER LOAD RATING)
- EXTRUDED ALUMINUM FRAME
- RECESSED LIFTING HANDLE
- LIFETIME GUARANTEE

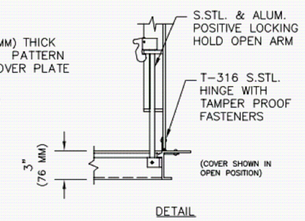
HALLIDAY PRODUCTS
www.HallidayProducts.com
Phone 800–298–1027
Fax 407–298–4534
Sales@HallidayProducts.com

STANDARD SIZES				
QTY.	MODEL NO.	A DIM. INCHES (MM)	C DIM. INCHES (MM)	UNIT WT. LBS. (KG.)
	S2R4242	42 (1067)	42 (1067)	93 (42)
	S2R4842	48 (1219)	42 (1067)	99 (45)
	S2R4848	48 (1219)	48 (1219)	110 (50)
	S2R5442	54 (1372)	42 (1067)	108 (49)
	S2R5448	54 (1372)	48 (1219)	119 (54)
	S2R5454	54 (1372)	54 (1372)	127 (58)
	S2R6030	60 (1524)	30 (762)	87 (39)
	S2R6036	60 (1524)	36 (914)	100 (45)
	S2R6042	60 (1524)	42 (1067)	115 (52)
	S2R6048	60 (1524)	48 (1219)	130 (59)
	S2R6054	60 (1524)	54 (1372)	143 (65)
	S2R6060	60 (1524)	60 (1524)	158 (72)
	S2R6636	66 (1676)	36 (914)	109 (49)
	S2R6648	66 (1676)	48 (1219)	141 (64)
	S2R7236	72 (1829)	36 (914)	116 (53)
	S2R7242	72 (1829)	42 (1067)	135 (61)
	S2R7248	72 (1829))	48 (1219)	151 (68)
	S2R7254	72 (1829)	54 (1372)	168 (76)
	S2R7260	72 (1829)	60 (1524)	178 (81)





SECTION A–A



DETAIL

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:

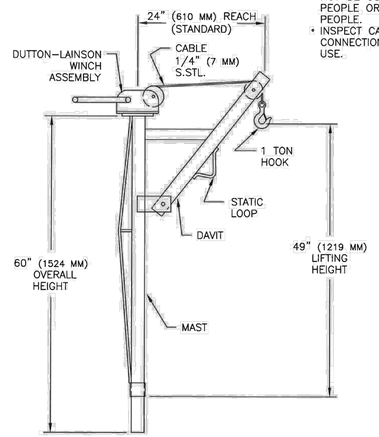
- TYPE–316 CONSTRUCTION
- ADDITIONAL CABLE AVAILABLE (SPECIFY LENGTH)
- STAINLESS STEEL WINCH
- STAINLESS STEEL HOOK
- OTHER REACHES AVAILABLE UPON REQUEST (CONSULT FACTORY)

HALLIDAY PRODUCTS
www.HallidayProducts.com
Phone 800–298–1027
Fax 407–298–4534
Sales@HallidayProducts.com

STANDARD SIZES			
QTY.	MODEL NO.	MAX. LOAD LBS. (KG.)	UNIT WT., LBS. (KG.)
	D1A24C	500 (227)	65 (30)
	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.



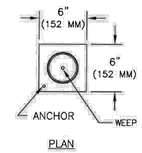
SER–DA–0 8/5/12

SERIES D HOIST SOCKETS

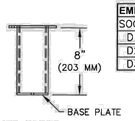
STANDARD FEATURES:

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

HALLIDAY PRODUCTS
www.HallidayProducts.com
Phone 800–298–1027
Fax 407–298–4534
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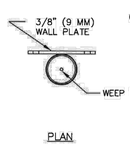


PLAN

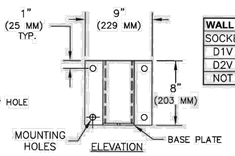


ELEVATION

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

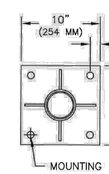


PLAN

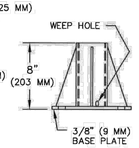


ELEVATION

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



PLAN



ELEVATION

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

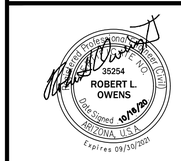
NOTES:
MOUNTING HOLES ARE ø3/4" (ø19 MM)

SER–D–0 8/5/12

iiná bá, Inc.
www.iinaba.com
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
35°54'12.32"N, 109°02'33.21"W
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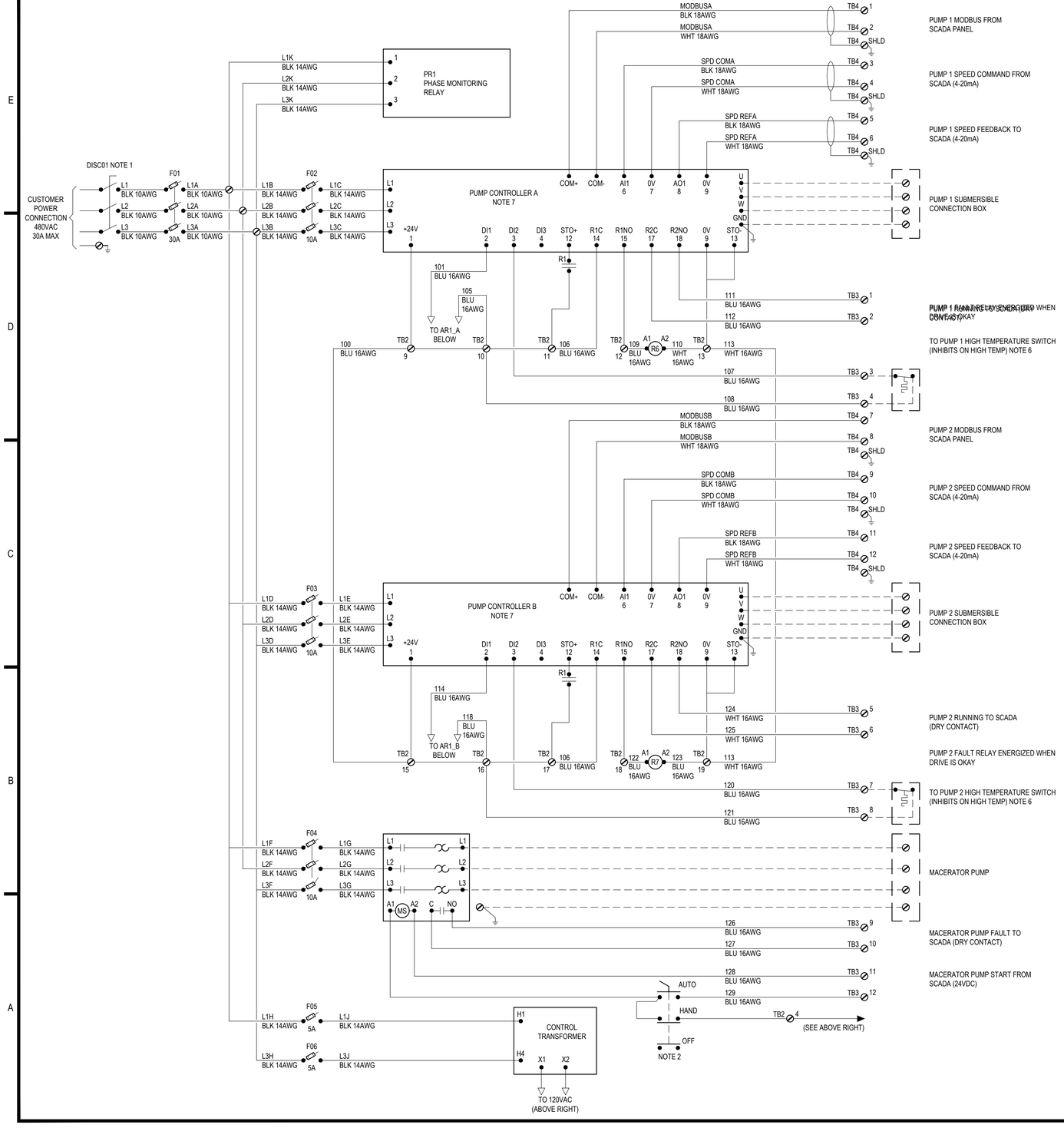
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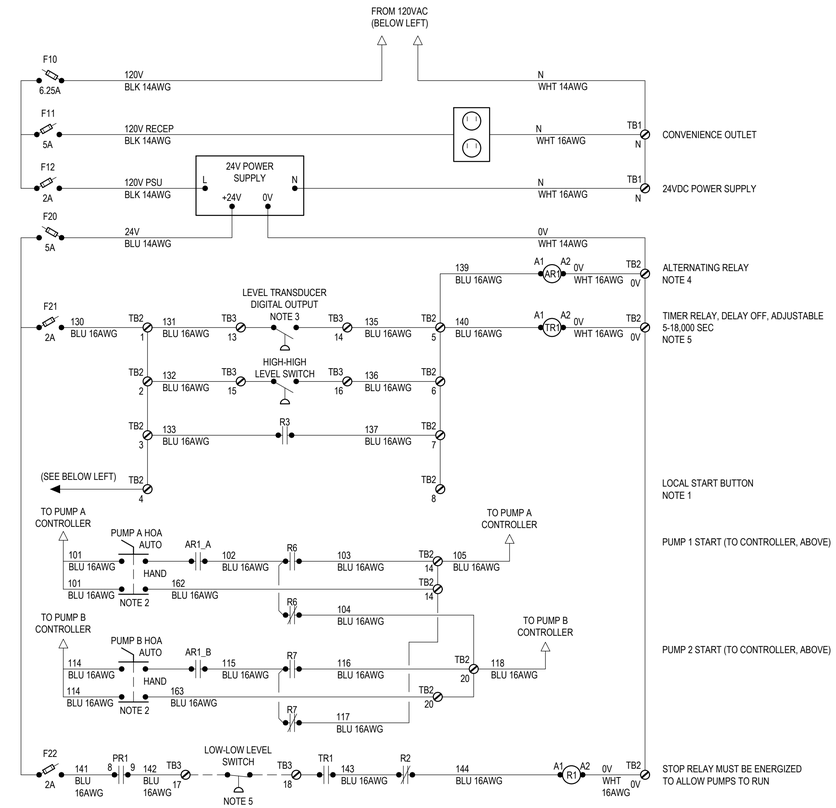
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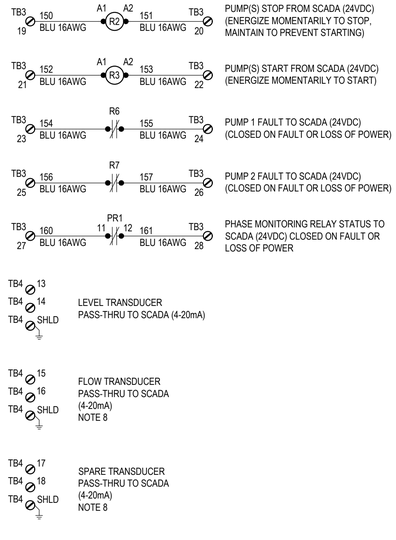
PROJECT NUMBER:	20-050-02
ENGINEER:	XXX
DRAWING SIZE:	ANSI D
DRAWING SCALE:	1" = 5'

DRAWING TITLE:
SPECIFICATIONS DETAILS

DRAWING NUMBER:
S-01







NOTES:

1. PANEL IS DESIGNED TO FUNCTION AUTOMATICALLY IF SCADA CONNECTIVITY IS LOST. SCADA COMMANDS CAN STILL CONTROL FUNCTIONALITY IF REQUIRED.
2. LOCAL SWITCHES ARE INSIDE ENCLOSURE ON SWING OUT PANEL AND CAN ONLY BE ACCESSED FROM INSIDE THE ENCLOSURE.
3. 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.
4. ALTERNATING RELAY SWAPS ACTIVE OUTPUT (A OR B) ON EACH ENERGIZE CYCLE.
5. SYSTEM OPERATION RELIES ON SEVERAL INSTRUMENTS TO PROVIDE REDUNDANT FUNCTIONALITY.
   - 5.1 LEVEL TRANSDUCER PROVIDES "HIGH" LEVEL PUMP START
   - 5.2 LEVEL HIGH-HIGH LEVEL FLOAT SWITCH PROVIDES PUMP START IF THE LEVEL TRANSDUCER FAILS.
   - 5.3 LEVEL TRANSDUCER PROVIDES "LOW" LEVEL PUMP STOP
   - 5.4 LEVEL LOW-LOW LEVEL FLOAT SWITCH PROVIDES PUMP STOP IF THE LEVEL TRANSDUCER FAILS.
   - 5.5 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.
6. 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.
7. PUMP CONTROLLER IS CONFIGURED VIA THE FOLLOWING VALUES:
   - 7.1. RUN AT MAXIMUM SET SPEED UNLESS AN ANALOG INPUT SPEED COMMAND IS RECEIVED FROM SCADA.
     - 7.1.1 MAXIMUM SPEED, MINIMUM START SPEED AND SPEED RAMP VALUES SET IN THE FIELD DURING COMMISSIONING
   - 7.2. DI1 IS CONFIGURED AS A MOMENTARY START SIGNAL TO START PUMP OPERATION.
   - 7.3. DI2 IS PUMP ALARM STATUS, WHICH TRIGGERS A PUMP FAULT AND DISABLES THE SPEED CONTROLLER.
   - 7.4. AI1 IS SPEED COMMAND FROM SCADA
   - 7.5. AO1 IS SPEED REFERENCE TO SCADA
   - 7.6. R1 IS DRIVE/PUMP FAULT
   - 7.7. R2 IS PUMP RUNNING STATUS
8. 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".
9. 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.
   - 9.1 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.
   - 9.2 ALL THREE SWITCHES SHOULD BE LEFT IN "AUTO" AT ALL TIMES WHEN THE PANEL IS UN-SUPERVISED.
   - 9.3 PLACING ANY DEVICE IN "HAND" SHOULD ONLY BE DONE WHILE THE PANEL IS SUPERVISED.
   - 9.4 PLACING A PUMP IN "HAND" STILL MAINTAINS ALL FUNCTIONS THAT AUTOMATICALLY STOP THE PUMP INCLUDING FAULTS.

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encorus.com

CLIENT:
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P.O. BOX 170
FT. DEFIANCE, AZ 86504

PROJECT:
REFURBISHMENT & UPGRADE OF EXISTING LIFT STATION
35°54'12.32"N, 109°02'33.21"W
NAVAJO, NEW MEXICO, 87238

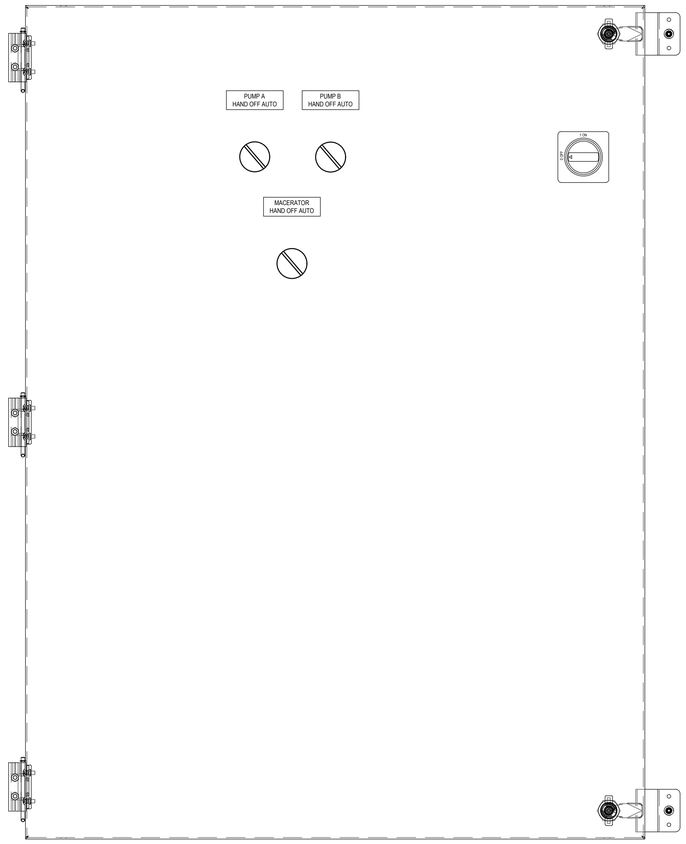
REVISIONS:

REV	DESCRIPTION	DATE	DFTR	CHKR
0	100% SUBMISSION	2020-10-06	SBV	GMC

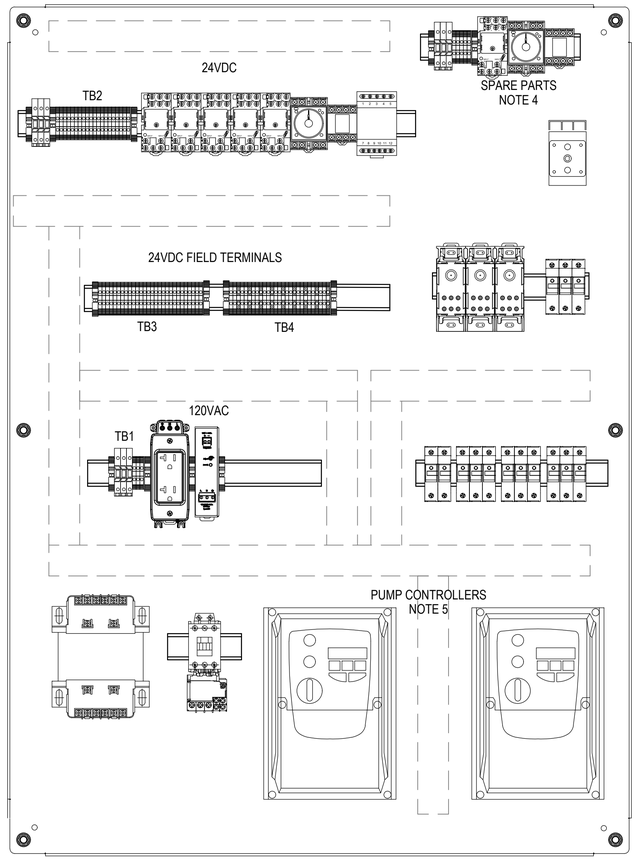
PROJECT NUMBER:	20244
ENGINEER:	GMC
DRAWING SCALE:	NTS
DRAWING SIZE:	ANSI D

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

DRAWING NUMBER:
EI601



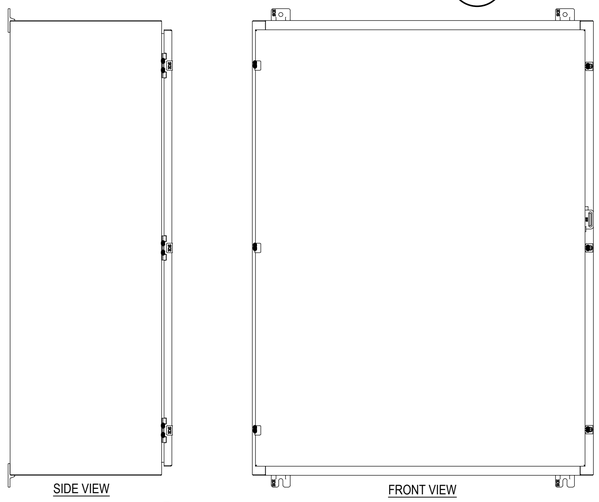
INTERIOR DEAD PANEL LAYOUT



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"

NOTES:

1. PANEL EXTERNAL LABELS, WARNINGS AND TAGGING TO BE DETERMINED FOR EACH SITE. ENCLOSURE MUST INDICATE POWER DISCONNECT IS MOUNTED INTERNALLY.
2. PANEL EXTERIOR HAS CAPABILITY FOR EXTERNALLY MOUNTED PADLOCK TO SECURE THE EXTERIOR DOOR. NO CONTROLS ARE ACCESSIBLE ON THE OUTSIDE OF THE ENCLOSURE.
3. 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.
4. 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.
5. 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.
6. 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	FUJI ELECTRIC	SC-E03G-24VDC	IEC CONTACTOR, 24VDC COIL, 12A FRAME
15	1	FUJI 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	FUJI ELECTRIC	MS4SM-CE-ADC	TIMER RELAY, 24VDC, DPDT, ADJUSTABLE
20	1	FUJI 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	FUJI 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

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	FUJI ELECTRIC	MS4SM-CE-ADC	TIMER RELAY, 24VDC, DPDT, ADJUSTABLE
6	1	FUJI ELECTRIC	TP411X	TIMER RELAY BASE FOR MS4SM SERIES
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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

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PROJECT:
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35°54'12.32"N, 109°02'33.21"W
NAVAJO, NEW MEXICO, 87238

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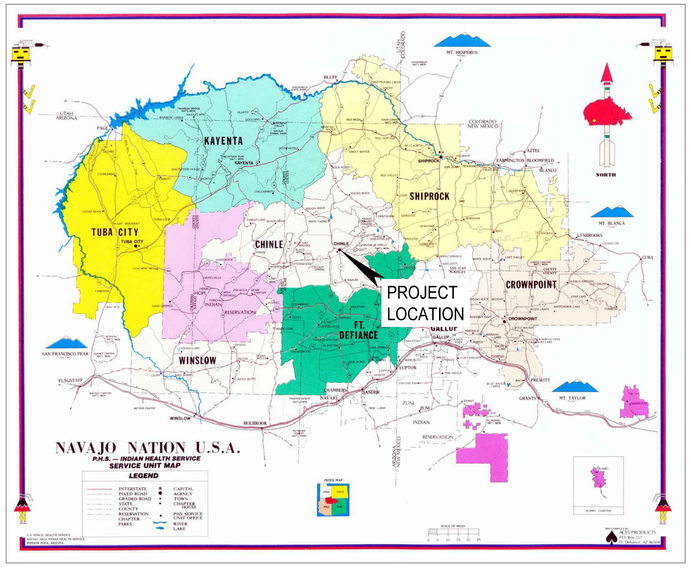
PROJECT NUMBER:	20244
ENGINEER:	GMC
DRAWING SCALE:	NTS
DRAWING SIZE:	ANSI D

DRAWING TITLE:
NAVAJO SITE PUMP PANEL 480V FABRICATION DIAGRAM

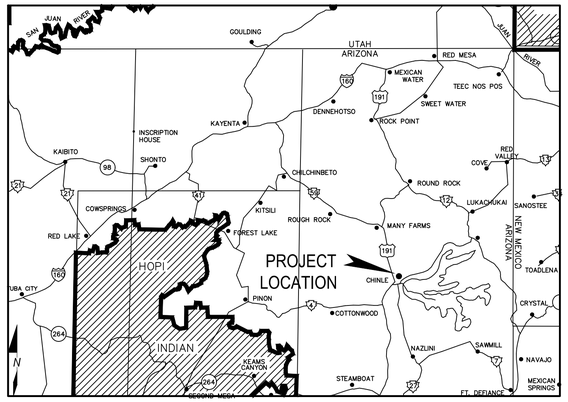
DRAWING NUMBER:
EI701

REFURBISHMENT & UPGRADE OF EXISTING LIFT STATION

CHINLE CHAPTER, APACHE COUNTY, ARIZONA
OCTOBER 2020



SITE LOCATION MAP
(NOT TO SCALE)



VICINITY MAP
(NOT TO SCALE)

100% PLANS
ISSUED FOR CONSTRUCTION
BY:LASPAAS DATE:Oct 12, 2020 4:32pm

REFURBISHMENT & UPGRADE OF LIFT STATION - CHINLE 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
G-06	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-603	ELECTRICAL ONE-LINE DIAGRAM
EI-703	ELECTRICAL INSTRUMENTATION PANEL

PREPARED FOR:

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

PREPARED BY:

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P.O. BOX 2606 Farmington, NM 87499

Registered Professional Engineer (Civil)
CERTIFICATE NO.
50207
ROBERT J RUNGE II
Date Signed
ARIZONA U.S.A.
EXPIRES: _____

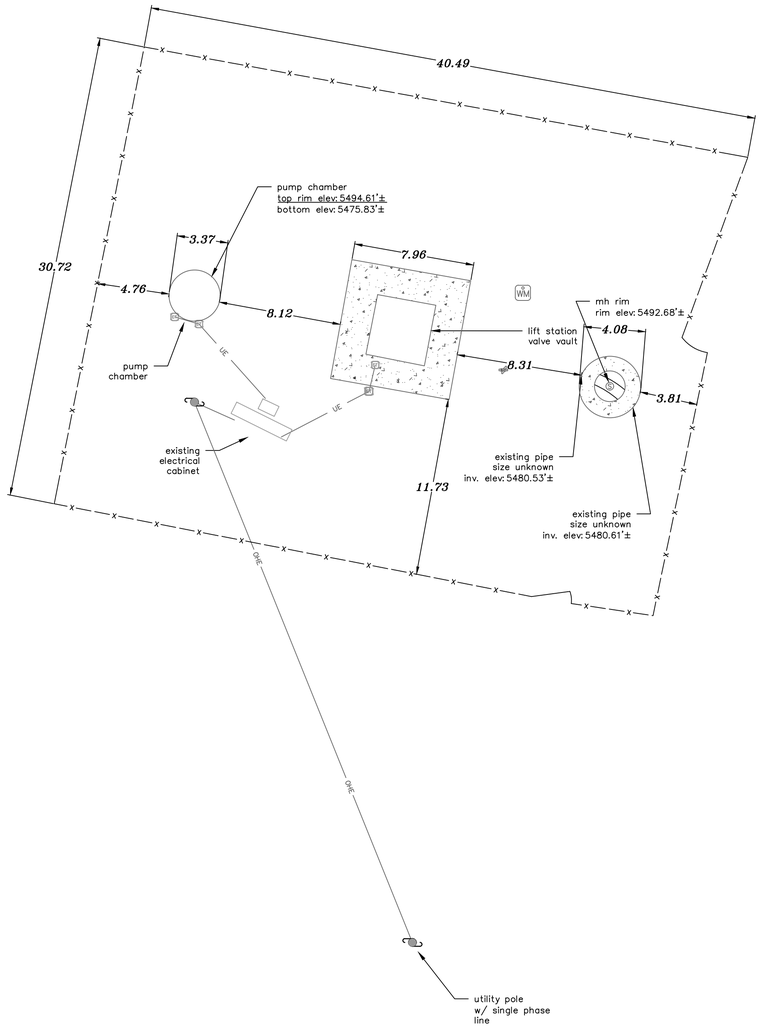
IBI #20-050-02

LEGEND

- TRACT LIMITS (SEE NOTE 4)
- EXISTING GRADE CONTOUR
- EDGE OF GRAVEL
- W — DOMESTIC WATER
- UE — UNDERGROUND ELECTRIC
- OHE — OVERHEAD ELECTRIC
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- UTILITY POLE
- LIGHT POLE
- PROPANE TANK
- WATER MANHOLE
- SCO — SEWER CLEANOUT
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- 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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CLIENT:
NAVAJO TRIBAL UTILITY AUTHORITY
P.O. BOX 170
Ft. Defiance, AZ, 86504

PROJECT:
REFURBISHMENT & UPGRADE OF EXISTING LIFT STATION
36°09'34.23"N, 109°34'27.52"W
CHINLE, ARIZONA 86503

ONLY VALID WITH ORIGINAL STAMP

REVISIONS:

REV	DESCRIPTION	DATE	DFTR	CHKR

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

5 2.5 0 5

DRAWING TITLE:
EXISTING FACILITY PLAN

DRAWING NUMBER:
G01

LEGEND

- TRACT LIMITS (SEE NOTE 4)
- EXISTING GRADE CONTOUR
- EDGE OF GRAVEL
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NORTH

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PROJECT NUMBER:	20-050-02
ENGINEER:	XXX
DRAWING SIZE:	ANSI D
DRAWING SCALE:	NTS

0 0 0 0

DRAWING TITLE:
EXISTING CONDITIONS SITE LAYOUT

DRAWING NUMBER:
G-02

BILL OF MATERIALS

DWG		PART NUMBER	MANUFACTURER	DESCRIPTION
M-02	1	30005-0008-DI	JWC	MUFFIN MONSTER
M--02	2	PC 2200	JWC	CONTROLLER ASSEMBLY
M-02	3	(INCLUDED)	JWC	CUSTOM FRAME ASSEMBLY
M-02	4	(INCLUDED)	JWC	CUSTOM GUIDE RAIL ASSEMBLY
M-02	5	(INCLUDED)	JWC	CUSTOM LIFTING BAIL ASSEMBLY
M-02	6	(INCLUDED)	JWC	O&M MANUALS (HARD COPY)
M-02	7	32537R	JWC	FRAME WALL MOUNT
M-02	8	32523	JWC	GUIDE PLATE
M-02	9	30249	JWC	HHCS 3/8-16 X ¾ SST
M-02	10	30140	JWC	LOCKWASHERS SPLIT 3/8 SST
S-01	11	D3A24E	HALLIDAY PRODUCTS	PORTABLE HOIST – 1,500 LB LIMIT; SST
S-01	12	SERIES D3S	HALLIDAY PRODUCTS	HOIST SOCKET; LINED
S-01	13	SERIES 2R	HALLIDAY PRODUCTS	ACCESS HATCH WITH SAFETY GATE
M-02	14	PRECAST LID (8'-0") FOR MOUNTING ON 7'-5" DIAMETER STEEL CYLINDER PUMP WELL	HALLIDAY PRODUCTS	PRECAST LID TO COVER TOP OF PUMP ROOM EXTENSION

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Registered Professional Engineer (Civil)
35254
ROBERT L. OWENS
Date Signed 10/6/20
ARIZONA, U.S.A.
Expires 09/30/2021

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ENGINEER:	XXX
DRAWING SIZE:	ANSI D
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DRAWING TITLE:

BILL OF MATERIALS

DRAWING NUMBER:

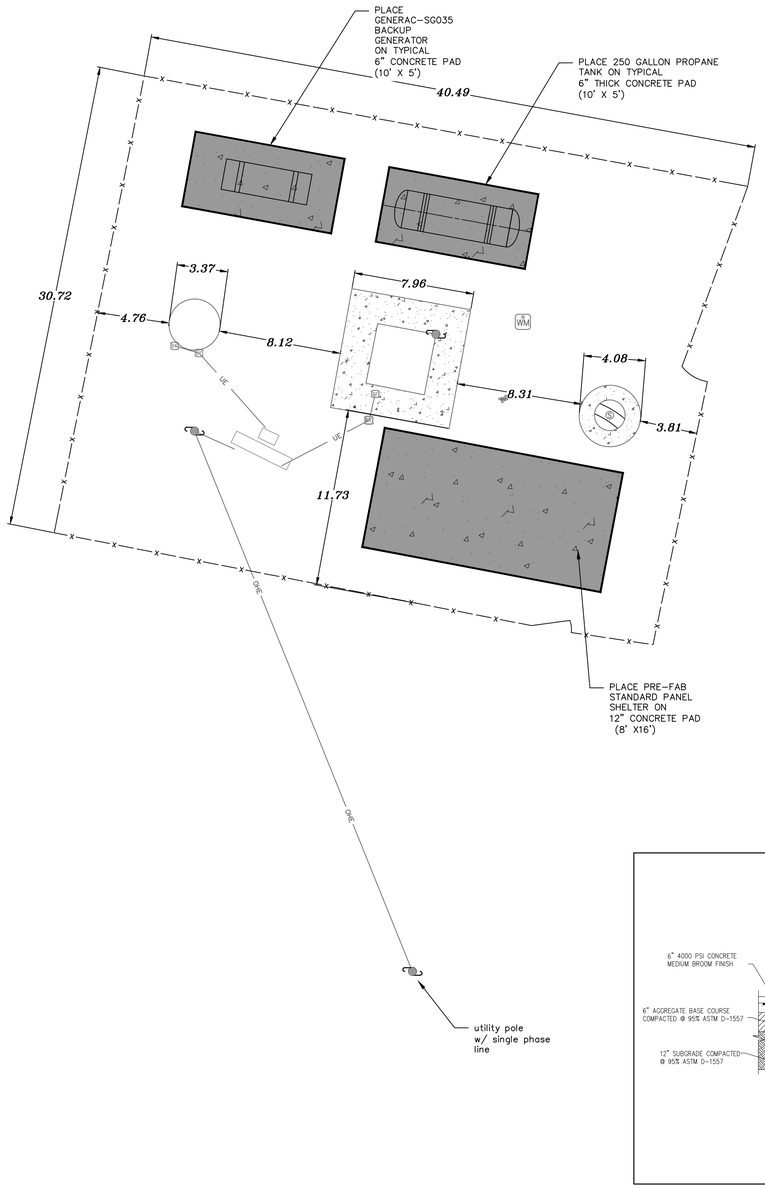
G-03

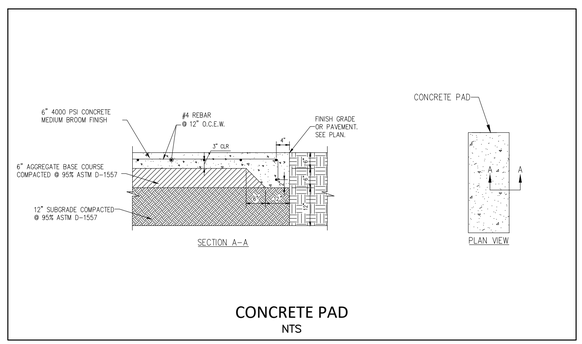
LEGEND

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- ELECTRIC JUNCTION BOX
- VENT PIPE
- GRAVEL SURFACE
- CONCRETE SURFACE
- PROPOSED CONCRETE SURFACE

NOTES:

1. TOPOGRAPHIC AND PHYSICAL FEATURES AS SHOWN ARE BASED ON A GROUND SURVEY PERFORMED BY IINA BA, INC. DURING AUGUST 2020.
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CONCRETE PAD
NTS

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Date Signed
ARIZONA U.S.A.

EXPIRES: _____

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REVISIONS:

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

5 2.5 0 5

DRAWING TITLE:
SITE PLAN

DRAWING NUMBER:
G-04

CHINLE 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 dialectric 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

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.
   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.

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

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. Regreasable 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.

   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
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

B. Probable motor horsepower ratings have been specified or shown on the Drawings. Changes from the specified horsepower may be accepted, if necessary to assure that motors do not exceed their maximum permissible loading, as defined above, under normal operation. Motor horsepowers 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

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.

COMMINUTOR/MACERATOR

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www.iinaba.com
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°09'34.23"N, 109°34'27.52"W
CHINLE, ARIZONA, 86503

35254
ROBERT L. OWENS
Date Signed 10/6/20
ARIZONA, U.S.A.
Expires 09/30/2021
ONLY VALID WITH ORIGINAL STAMP

REVISIONS:

REV	DESCRIPTION	DATE	DFTR	CHKR

PROJECT NUMBER: 20-050-02
ENGINEER: XXX
DRAWING SIZE: ANSI D
DRAWING SCALE: NTS

DRAWING TITLE:
MECHANICAL SPECIFICATIONS

DRAWING NUMBER:
G-05

SECTION 11330
MUFFIN MONSTER®
IN-CHANNEL GRINDER – SERIES 30005
2" hex/Wipes Ready/XPNV Immersible Electric Motor/PC2200 Controller

PART 1 - GENERAL

1.1 SCOPE OF WORK

A. The Contractor shall furnish, install, place into satisfactory operation, and warrant the Wipes Ready 30005 for shredding municipal wastewater solids, as shown on the Plans and described by the Specifications.

B. All items detailed in this section shall be provided by the same manufacturer.

1.2 REFERENCE STANDARDS

A. Equipment shall, as applicable, meet the requirements of the following industry standards:

1. American Society for Testing and Materials (ASTM) A36 Carbon Steel Plate
2. American Society for Testing and Materials (ASTM) A536-84 Ductile Iron Castings
3. American Iron and Steel Institute (AISI) 4130 Heat Treated Alloy Steel
4. American Iron and Steel Institute (AISI) 4140 Heat Treated Alloy Steel
5. American Iron and Steel Institute (AISI) 8620 Heat Treated Alloy Steel
6. American Iron and Steel Institute (AISI) 303 Stainless Steel
7. American Iron and Steel Institute (AISI) 304 Stainless Steel
8. American Iron and Steel Institute (AISI) 316 Stainless Steel
9. American Iron and Steel Institute (AISI) 17-4 PH Stainless Steel
10. Society of Automotive Engineers (SAE) 660 Bearing Bronze

B. Controllers shall, as applicable, meet the requirements of the following Regulatory Agencies:

1. National Electrical Manufacturer's Association (NEMA) Standards
2. National Electrical Code (NEC)
3. Underwriters Laboratory (UL and cUL)
4. International Electrotechnical Commission (IEC)

1.3 QUALITY ASSURANCE

A. Identification

1. Equipment shall be identified with a corrosion-resistant nameplate affixed in a conspicuous location.

2. Nameplate information shall include manufacturer's name and address, equipment model number, and serial number.

a. Intermediate shaft yokes shall be factory lubricated with high temperature marine grade grease.

b. Grease fittings shall be provided on intermediate shaft yokes for periodic maintenance.

c. Intermediate shaft yokes shall only be supplied on cutter stacks of 32-inches (813mm) and taller.

4. Side Rails

a. Side rails shall be constructed of ASTM A536 ductile iron.

b. Cutter side rail shall have evenly-spaced horizontal fingers. Fingers shall be designed to create a pressure differential towards the center of the grinder, directing solids into the cutter stack, while at the same time minimizing overall pressure drop through the grinder.

c. Clearance between cutter side rail and adjacent cutters shall not exceed 0.100" (2.54 mm).

5. Shaft Bearings and Seals

a. Radial and axial loads shall be borne by sealed, oversized, deep-groove ball bearings.

b. Shaft seal type shall be mechanical.

c. Each bearing and seal arrangement shall be incorporated into a cartridge-style housing.

d. Cutter shafts shall be supported on both ends. Cantilever-style arrangements shall not be permitted.

e. Dynamic and rotating seal faces shall be Tungsten Carbide with 6% Nickel binder.

f. Seal cartridges shall be rated to a maximum pressure of 90 psi (620 kPa).

g. O-rings shall be of BUNA-N.

h. Seal cartridges shall not require flushing.

i. Seals shall be rated to operate wet or dry.

6. Housings and Covers

d. Housings and top cover shall be of ASTM A536 ductile iron. Bottom cover shall be of A36 carbon steel.

e. End housings shall have integral bushing deflectors to guide solids away from seal cartridges.

A. Manufacturer

1. Supplier shall be ISO9001 certified and have a minimum 40 years experience as a manufacturer of municipal waste water equipment and a minimum 10000 prior installations of similar equipment.

2. Supplier shall, at request, provide a list of reference sites of similar equipment for verification by the Engineer or Owner's representative.

3. Supplier shall conduct factory testing and verification of equipment prior to shipment.

4. Supplier shall have factory-owned bi-coastal service centers in USA.

5. Supplier shall have an exchange/repair service program.

1.4 SUBMITTALS

A. Approval Documents

Supplier shall submit approval documents in .pdf format. Submittals shall include equipment descriptions, functional descriptions, dimensional and assembly drawings, catalog data, job specific drawings, manufacturer's instructions, and recommended spares.

B. Operation and Maintenance Manuals

The supplier shall submit one (1) copy of a suitable operation & maintenance manual. An electronic version shall be supplied to create additional copies. The manuals shall include equipment descriptions, operating instructions, drawings, troubleshooting techniques, a recommended maintenance schedule, recommended lubricants, and recommended spares.

C. Warranty Documentation

The supplier shall submit a warranty statement clearly identifying the scope and term of the warranty.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Packaging and Shipment

1. Equipment shall be packaged in containers or on skids suitable for normal shipping, handling, and storage.

2. Equipment shall be protected from rain, snow, impact and abrasion while in the possession of the carrier.

B. Delivery and Acceptance Requirements

Contractor shall review the contents of the shipment at time of delivery and promptly notify the carrier and supplier of any discrepancies.

8. Transfer Gears

a. Transfer gears shall be of involute profile and fabricated from heat treated alloy steel.

b. Transfer gear tooth design, thickness and hardness shall be suitable to transfer torque between shafts up to the rated breakdown torque of the motor.

c. The interface between transfer gears shall be factory lubricated with grease to minimize wear.

d. The transfer gear ratio shall be such that the ratio of cutter tip speed of the low speed shaft to cutter tip speed of the high speed shaft shall be greater than 0.90 and less than 1.00 to promote tearing of material as it passes through the cutter stack and at the same time facilitate cleanout of material from between the cutters.

9. Low Speed Coupling

a. Low speed coupling shall be a 3-jaw type.

b. The 3-jaw halves shall be of hardened 4140 alloy steel.

c. Each low speed coupling half shall be encapsulated on its mating shaft to facilitate proper engagement of coupling lobes (1/16" – 1/8").

d. The interface between low speed coupling halves shall be factory lubricated with grease to minimize wear.

7. Speed Reducer

a. Speed reducer shall be manufactured by Sumitomo Machinery Corporation of America.

b. Speed reducer shall be a cycloidal type.

c. Speed reduction ratio shall be 29:1.

d. Speed reducer shall be grease lubricated.

8. High Speed Coupling

a. High speed coupling shall be a 3-jaw type with elastomer spider.

b. The 3-jaw halves shall be of sintered iron.

c. The spider shall be of BUNA-N.

9. Motor

a. Motor shall be manufactured by Baldor Electric Company.

b. Motor shall have characteristics as listed in Performance Requirements.

12. Lifting Brackets

C. Storage and Handling Requirements

1. Equipment shall remain in the packaging provided by the supplier until it is installed.

2. Equipment shall be stored in a dry environment between 40°F (4.5°C) and 100°F (37.8°C).

D. Packaging Waste Management

Contractor shall be responsible for discarding all packaging materials in an environmentally-friendly manner and in accordance with local regulations.

1.6 WARRANTY

Manufacturer's standard 12-month limited warranty shall be provided with the equipment.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Equipment shall be in accordance with these plans and specifications and shall be supplied by one of the following manufacturers:

1. JWC Environmental, LLC, 290 Paularino Ave., Costa Mesa, CA 92626; Tel: 800-331-2277

Muffin Monster Grinder Model 30005, Wipes Ready
Motor Controller Model PC2200

2. Approved equal.

B. Manufacturers requesting to be selected as an approved equal shall satisfy the requirements of the following section "Pre-Approval of Alternate Equipment."

2.2 PRE-APPROVAL OF ALTERNATE EQUIPMENT

A. Manufacturers requesting to be selected as an approved equal shall either: (i) perform a pilot test at the facility, or; (ii) coordinate a site visit to allow the Engineer and owner the opportunity to witness the performance of the proposed equipment. This task shall be completed a minimum of 10 days prior to the bid. All expenses associated with (i) or (ii) above shall be paid for by the submitting manufacturer.

B. Manufacturers requesting to be selected as an approved equal shall also submit certified documentation showing compliance with these specifications a minimum of ten (10) days prior to bid opening. Selected equipment manufacturers shall be added to the list of approved manufacturers at engineer's discretion.

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2.3 PERFORMANCE REQUIREMENTS

A. General

Grinder shall reduce or shred influent solids for protection of downstream equipment.

a. Grinder shall be fitted with two (2) lifting rings.

2.6 MOTOR CONTROLLER

A. Description

Controller shall provide programmable operation of the grinder system. Controller shall have switches, indicator lights, and other control devices.

Controller shall be designed to suit the supply power and motor characteristics listed in Performance Requirements.

B. Components

1. Enclosure

a. Enclosure shall be fiberglass reinforced plastic, NEMA 4X.

b. Enclosure shall house motor starter, PLC, and control devices.

2. Selector switches

a. Selector switches shall be 22 mm, rated equal to or better than the enclosure.

b. Grinder selector switch shall be three-position and indicate On-Off/Reset-Remote.

3. Pilot Lights

a. Lights shall be 22 mm, LED (pilot lamp), rated equal or better than the enclosure.

b. Lights shall indicate POWER ON, grinder RUN, grinder JAMMED and MOTOR FAULT.

4. Motor Starter

a. Starter shall be IEC, full voltage, reversing.

b. Contactors shall have 120-volt operating coils.

c. Overload relays shall be adjustable and sized to full load amperes (FLA) of the motor.

5. Control Power Transformer

a. Control power transformer shall produce 120-volt AC power from the supply power. Transformer shall be sized and fused in accordance with code to accommodate the control power requirements.

6. Programmable Logic Controller

a. PLC shall be a Panasonic FPX.

7. Current Transducer

a. Current transducer shall be a discrete output type.

b. Current transducer shall have adjustable set point from 1-135A with 200 ms or faster response time.

C. Operation

1. Grinder control shall be in accordance with the setting of the On-Off/Reset-Remote selector switch.

a. In the OFF/RESET position the grinder shall not run. Motor controller faults shall be cleared.

b. In the ON position, the grinder shall run forward.

c. In the REMOTE position, the grinder shall operate as controlled by a remote start/stop dry contact.

2. When an obstruction jams the grinder, the controller shall stop the grinder and reverse the rotation to clear the obstruction. If the obstruction is cleared, the controller shall return the grinder to normal operation. If three (3) reverses occur within a 30 second interval, the controller shall stop the grinder motor and activate the grinder FAIL indicator and relay.

3. When a motor overload or motor over-temperature condition occurs, the motor shall be de-energized, the MOTOR FAULT indicator lamp shall be illuminated and the FAIL contact shall be closed.

4. When a power failure occurs while the system is operating, the system shall return to normal operation when power is restored.

5. When a power failure occurs while the grinder is in a fail condition, the system shall return to a fail state when power is restored. The fail state shall not be cleared until reset.

6. Reset of the grinder shall be accomplished from the controller only.

2.7 FINISHES

A. Paint Coatings (Ferrous Materials)

Ferrous metal surfaces shall be prepared to SSPC-SP6 (Commercial Blast Cleaning) and coated with minimum 6-8 mils TDFT (total dry film thickness) paint of type and color listed in Performance Requirements.

B. Paint Coatings (Previously-Coated Components)

Previously-coated components (motors, speed reducers, etc.) shall be prepared to SSPC-SP1 (Solvent Cleaning) and SSPC-SP2 (Hand Tool Cleaning) and coated with minimum 6-8 mils TDFT (total dry film thickness) paint of type and color listed in Performance Requirements.

PART 3 - EXECUTION

3.1 INSTALLATION

B. Design Summary

1. Number of grinders	1
2. Number of motor controllers	1
3. Environment rating for grinders	Hazardous, subject to flooding
4. Environment rating for motor controllers	Non-hazardous
5. Supply power characteristics	460 volt / 3 phase / 60 Hertz
6. Nominal stack height	__" (___ mm)
7. Minimum liquid handling capacity per grinder	___ GPM (_ _ l/s)
8. Maximum head drop across cutter stack	__" (___ mm) at minimum capacity
9. Cutter type	Serrated 17-tooth
10. Spacer type	Knurled
11. Side rail type	Delta-P high flow, high capture
12. Shaft seal type	Mechanical, Tungsten Carbide
13. Seal maximum pressure	90 psi (620 kPa)
14. Speed reducer type and ratio	Cycloidal, 29:1
15. Installed horsepower	3 hp (2.2 kW)
16. Motor type	XPNV, Immersible
17. Motor service factor	1.15
18. Minimum motor efficiency (at full load)	88.8%
19. Minimum motor power factor (at full load)	65.0%
20. Minimum peak shaft torque	5,185 lb-in/hp (786 Nm/kW)
21. Minimum peak force at cutter tip	2,202 lb/hp (13,134 N/kW)

2.4 FRAME AND SUPPORTS

A. General

Frame and/or supports shall provide a method for properly securing the grinder in an open channel or wet well. The frame shall allow installation or removal without any disassembly of the frame or grinder.

B. Components

1. Frame shall be fabricated of 304 stainless steel.

2. Frame shall provide proper support and interface to prevent unwanted bypass.

2.5 GRINDER

A. General

Grinder shall be of two-shafted design consisting of individual cutters and spacers driven by hexagonal shafts. The cutters shall actively grab and pull material into the stack for shredding. Grinder shall have upper and lower end housings to retain shaft support bearings and seals. Side rails shall provide structural rigidity while optimizing throughput and capture. Grinder shall have a motor and speed reducer to drive the cutter shafts. The equipment shall operate at low speed with a maximum cutter shaft speed of 60 rpm and shall be specifically-designed for capturing and shredding wipes.

B. Components

1. Cutters and Spacers

a. Cutting stack shall be of nominal height listed in Performance Requirements.

b. Cutting stack shall consist of interleaved cutters and spacers.

c. Cutters and spacers shall be individual disks constructed of heat treated alloy steel.

d. Cutters shall be heat treated to 45-53 HRc.

e. Spacers shall be heat treated to 34-53 HRc

f. Cutters shall have 17 teeth and be 0.438" (11.13 mm) thick.

g. Cutters shall have radial serrations on the leading edges designed to perforate material as it passes between the cutter and adjacent spacer.

h. Cutter tooth height shall be not greater than ½-inch (13 mm) above the root diameter of the cutter.

i. Cutter outside diameter shall not exceed a maximum 4.73" (120.14 mm).

j. Cutter thickness tolerance shall be +.000/-.001" (+.000/-.025 mm). Spacer thickness tolerance shall be +.001/-.000" (+.025/-.000 mm).

k. Spacers shall have a knurled outside diameter designed to aid in tearing of material as it passes through the cutter stack.

l. Spacers shall be 0.446" (11.33 mm) thick.

m. Cutter to cutter clearance shall be a maximum of 0.010" (0.25 mm).

n. Clearance between any cutter tip and adjacent spacer shall be nominal 0.015" (0.38 mm).

2. Shafts

a. Shafts shall be hexagonal, 2" (50.8 mm) across flats.

b. Shafts shall be of heat treated 4140 alloy steel with a minimum tensile strength of 149,000 psi (1,027 kPa).

c. Shaft hardness shall be 38-42 Rockwell C.

3. Intermediate Shaft Yoke (as applicable)

a. Intermediate shaft yokes shall provide radial support to the shafts during severe grinding demands.

b. Intermediate shaft yokes shall be constructed of 304 stainless steel, 660 bronze, and 17-4PH Stainless steel.

The Contractor shall coordinate installation of the equipment in accordance with the manufacturer's installation instructions, drawings and related specification sections, and in accordance with all OSHA, local, state, and federal codes and regulations.

3.2 SYSTEM START-UP

The equipment supplier shall provide the services of a factory or manufacturer's representative for a minimum of one (1) day to inspect the equipment for proper installation, apply power for the first time and check for proper motor rotation, oversee the initial introduction of material into the system and confirm the equipment operates as intended. Representative shall also provide services as detailed in Training below.

3.3 TRAINING

Field training shall be provided for operations, maintenance and supervisory staff members. Field instruction shall cover key components of the equipment, operating and maintenance requirements and troubleshooting techniques.

END OF SECTION

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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°09'34.23"N, 109°34'27.52"W
CHINLE, ARIZONA, 86503

Licensed Professional Engineer (Civil)
35254
ROBERT L. OWENS
Date Signed 10/6/20
ARIZONA, U.S.A.
Expires 09/30/2021

ONLY VALID WITH ORIGINAL STAMP

REVISIONS:

REV	DESCRIPTION	DATE	DFTR	CHKR

PROJECT NUMBER:	20-050-02
ENGINEER:	XXX
DRAWING SIZE:	ANSI D
DRAWING SCALE:	NTS

DRAWING TITLE:

MECHANICAL SPECIFICATIONS

DRAWING NUMBER:

G-06

INSTRUMENT SYMBOL IDENTIFIERS

J-3 J-4, J-5
J-1 / J-2
J-6

J-1: IDENTIFICATION LETTERS (SEE TABLE BELOW)
J-2: LOOP NUMBER
J-3: VENDOR DESIGNATOR (NOTE 3)
J-4: FUNCTION BLOCK (SEE TABLE BELOW)
J-5: PANEL NUMBER
J-6: HANDSWITCH DESIGNATOR (SEE BELOW)

	FIRST LETTER		SUCCEEDING LETTERS		
	MEASURED OR INITIATING VARIABLE	MODIFIER	READOUT OR PASSIVE FUNCTION	OUTPUT FUNCTION	MODIFIER
A	ANALYSIS		ALARM		
B	BURNER, COMBUSTION		USER'S CHOICE	USER'S CHOICE	USER'S CHOICE
C	USER'S CHOICE			CONTROL	CLOSED
D	DENSITY	DIFFERENTIAL	DAMPER		
E	VOLTAGE		SENSOR (PRIMARY ELEMENT)		
F	FLOW RATE	RATIO (FRACTION)			
G	USER'S CHOICE		GLASS, VIEWING DEVICE		
H	HAND				HIGH
I	CURRENT (ELECTRICAL)		INDICATE		
J	POWER	SCAN			
K	TIME, TIME SCHEDULE	TIME RATE OF CHANGE		CONTROL STATION	
L	LEVEL		LIGHT		LOW
M	MOISTURE	MOMENTARY			MIDDLE, INTERMEDIATE
N	USER'S CHOICE		USER'S CHOICE	USER'S CHOICE	USER'S CHOICE
O	USER'S CHOICE		ORIFICE, RESTRICTION		OPEN
P	PRESSURE, VACUUM		POINT (TEST) CONNECTION		
Q	QUANTITY	INTEGRATE, TOTALIZE			
R	RADIATION		RECORD		
S	SPEED, FREQUENCY	SAFETY	SWITCH		
T	TEMPERATURE			TRANSMIT	
U	MULTI VARIABLE		MULTIFUNCTION	MULTIFUNCTION	MULTIFUNCTION
V	VIBRATION, MECHANICAL ANALYSIS			VALVE, DAMPER, OR LOUVER	
W	WEIGHT, FORCE		WELL		
X	UNCLASSIFIED	X AXIS	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED
Y	EVENT, STATE, PRESENCE	Y AXIS		RELAY, COMPUTE, CONVERT	
Z	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

- Σ SUMMING
- △ DIFFERENCE
- ∫ INTEGRAL
- d/dt DERIVATIVE
- × MULTIPLYING
- ÷ DIVIDING
- */ CONVERT:
- √ ROOT EXTRACTION
- √ SQUARE ROOT
- x^n EXPONENTIAL
- > HIGH SELECTING
- < LOW SELECTING
- ± BIAS
- F(X) NONLINEAR OR UNSPECIFIED FUNCTION

* E – VOLTAGE, I – CURRENT, P – PNEUMATIC, A – ANALOG, B – BINARY, H – HYDRAULIC, O – ELECTROMAGNETIC, SONIC, R – RESISTANCE (ELECT), D – DIGITAL

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
1–0	ON–OFF		

INSTRUMENT SERVICES

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

PLC INPUT/OUTPUT

- DISCRETE INPUT
- DISCRETE OUTPUT
- ANALOG INPUT
- 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 (I2/B)
- LINE CONTINUATION
- DRAWING REFERENCE
- PIPE SYSTEM (24" BW)
- PIPE SIZE IN INCHES
- PNEUMATIC
- ELECTRICAL SIGNAL ANALOG
- ELECTRICAL SIGNAL DISCRETE
- HYDRAULIC
- CAPILLARY TUBE
- SOFTWARE OR DATA LINK
- ELECTROMAGNETIC OR SONIC (GUIDED)

MECHANICAL OR ELECTRICAL — CONNECTED

NOT CONNECTED

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
- M — MOTOR
- CYLINDER OPERATOR
- S — SOLENOID
- SV — 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
- PERISTALTIC PUMP
- M — MIXER
- TURBINE 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
- * AV – AIR VALVE, F – FILTER, T – TRAP, FH – FIRE HYDRANT
- WATER

NOTES

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

iiná bá, Inc.
www.iinaba.com
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°09'34.23"N, 109°34'27.52"W
CHINLE, ARIZONA, 86503



ONLY VALID WITH ORIGINAL STAMP

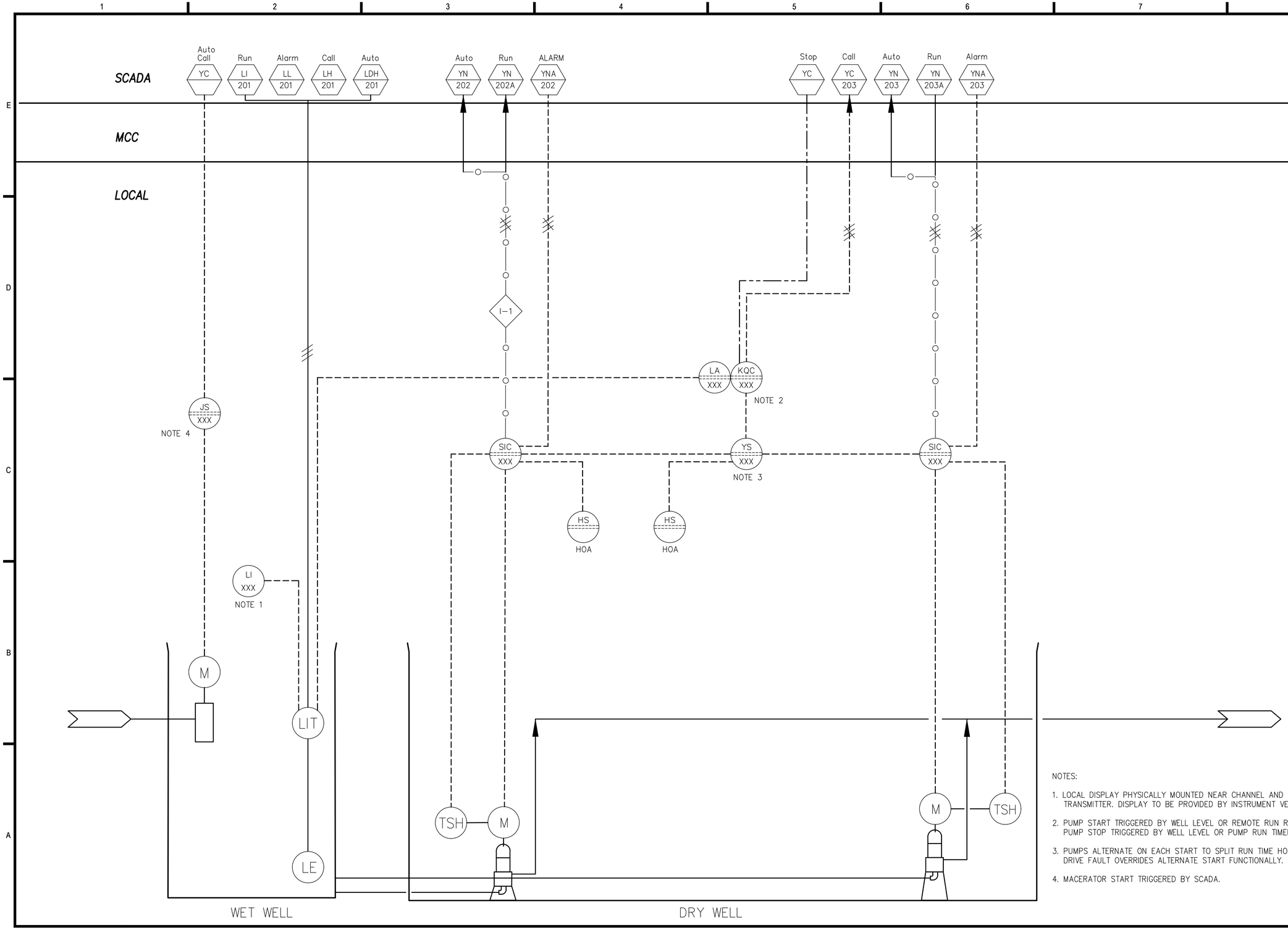
REVISIONS:

REV	DESCRIPTION	DATE	DFTR	CHKR

PROJECT NUMBER:	20-050-02
ENGINEER:	XXX
DRAWING SIZE:	ANSI D
DRAWING SCALE:	NTS

DRAWING TITLE:
INSTRUMENTATION AND CONTROL STANDARDS AND CONTROL STANDARDS

DRAWING NUMBER:
D-01



NOTES:

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

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35254
ROBERT L. OWENS
Professional Engineer
ARIZONA U.S.A.
Date Signed 10/8/20
Expires 09/30/2021

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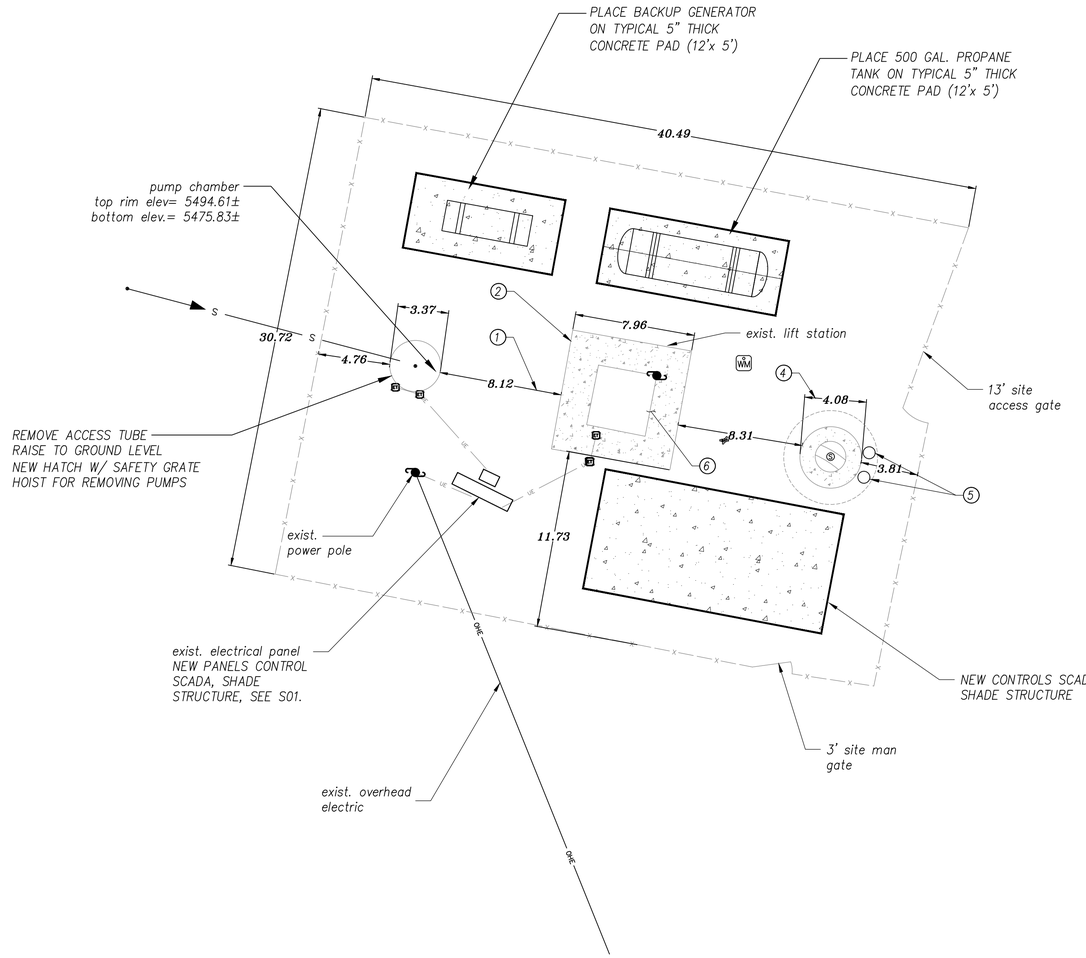
REVISIONS:

REV	DESCRIPTION	DATE	DFTR	CHKR

PROJECT NUMBER:	20-050-02
ENGINEER:	XXX
DRAWING SIZE:	ANSI D
DRAWING SCALE:	NTS

DRAWING TITLE:
PROCESS AND INSTRUMENTATION DIAGRAM

DRAWING NUMBER:
D-02





LEGEND

- TRACT LIMITS (SEE NOTE 4)
- EXISTING GRADE CONTOUR
- EDGE OF GRAVEL
- W — DOMESTIC WATER
- UE — UNDERGROUND ELECTRIC
- OHE — OVERHEAD ELECTRIC
- GAS — PROPANE GAS
- EXIST. FENCE
- UTILITY POLE
- LIGHT POLE
- PROPANE TANK
- WATER MANHOLE
- SCO — SEWER CLEANOUT
- WV — WATER VALVE
- WM — WATER METER
- W — WATER MANHOLE
- WATER SHUTOFF
- WATER SPIGOT
- ANTENNA
- ET — ELECTRIC JUNCTION BOX
- VENT — 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.

EXIST. COMPONENTS	
1	influent 8" vcp gravity sewer
2	square wet well with choial bottom
3	dry pit
4	entry shaft
5	dry pit vertical non-clog chopper pumps

NEW COMPONENTS	
6	COMMINUTOR / MACERATOR

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35254
ROBERT L. OWENS
Date Signed 10/07/20
ARIZONA, U.S.A.
Expires 09/30/2022

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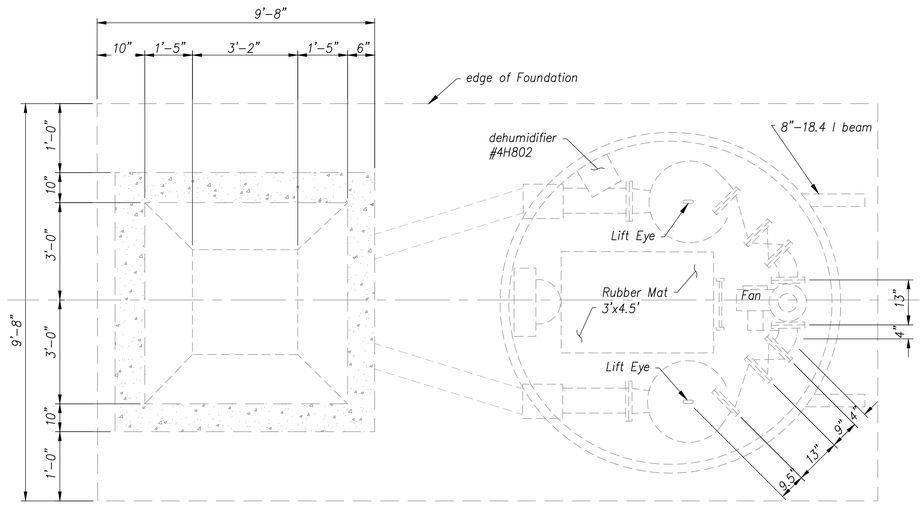
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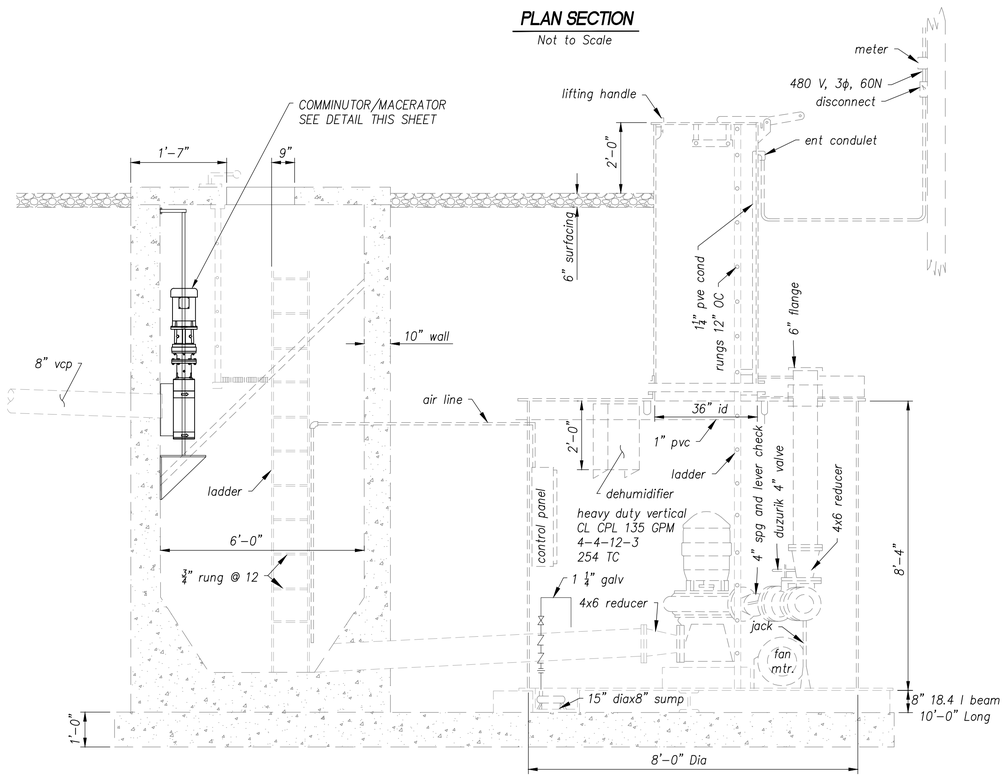
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ENGINEER:	XXX
DRAWING SIZE:	ANSI D
DRAWING SCALE:	NTS

DRAWING TITLE:
MECHANICAL SITE PLAN

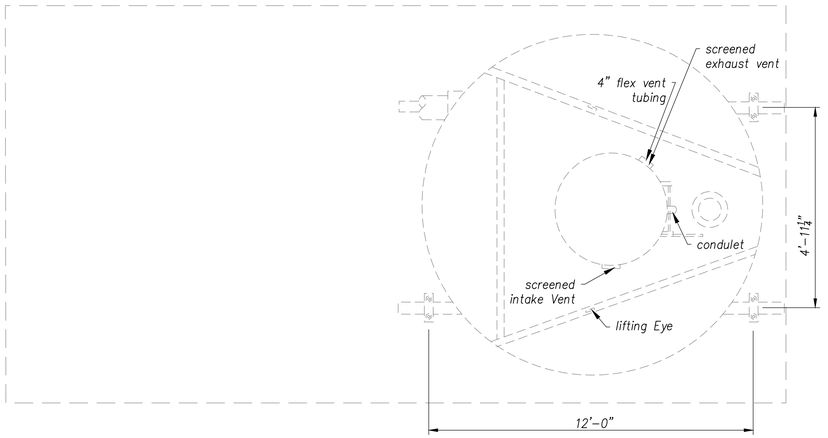
DRAWING NUMBER:
M-01



PLAN SECTION
Not to Scale



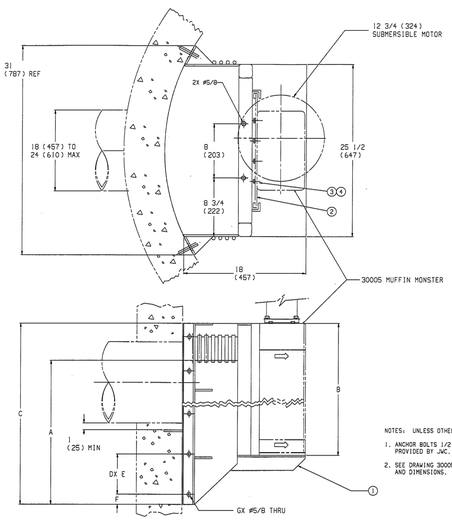
ELEVATION
Not to Scale



SK-2 Chinle

Halliday Products	Dimensions	
Series S2R Access Door w/ Safety Grate	**what size?**	*not indicated on plans.
Series D Hoist Sockets	D3S Lined	*this is just the socket, does NTUA need a hoist?
Series Portable Hoist	**D3A or D3B?**	*this two Hoist pair with the D3S lined socket.

Concrete Lid		
H-20 rated	8ft ID 10" traffic rated lid	*Outside Diameter is 114".
Bottom of Lid	**Flat or grooved?**	



NOTES: UNLESS OTHERWISE SPECIFIED

1. ANCHOR BOLTS 1/2 (6) X 3 3/4 (95) MIN NOT PROVIDED BY JAC.
2. SEE DRAWING 30005-CD FOR GRINDER DETAILS AND DIMENSIONS.

COMMINUTOR MACERATOR DETAIL
Not to Scale

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REVISIONS			
ZONE	LTR	DESCRIPTION	DATE / APPROVED
	ALL	REVS INITIAL RELEASE	09-27-22 / S-30056-CD
	CE	1 ¼ COLUMN C WAS 12"DIAM IS 8"DIAM	09-08-24 / S-31940-CD

TAB BLOCK							
MODEL NO.	DIMENSIONS & QUANTITIES						
	A	B	C	D	E	F	G
30005-8	20 3/4 (527)	19 1/2 (495)	26 3/4 (679)	8	5 15/16 (151)	1 1/2 (38)	10
30005-12	24 7/8 (632)	23 5/8 (600)	30 7/8 (784)	8	6 13/16 (173)	2 (51)	10
30005-18	30 3/4 (781)	29 1/2 (749)	36 3/4 (933)	8	8 7/16 (214)	1 1/2 (38)	10
30005-24	36 1/2 (927)	35 1/4 (895)	42 1/2 (1080)	8	9 3/4 (248)	1 1/2 (38)	10
30005-32	44 1/4 (1124)	43 (1092)	50 1/4 (1276)	10	9 3/8 (238)	1 1/2 (38)	12
30005-40	52 1/4 (1327)	51 (1295)	58 1/4 (1480)	10	10 7/8 (276)	2 1/2 (64)	12
30005-50	62 1/4 (1581)	61 (1549)	68 1/4 (1734)	12	10 11/16 (271)	2 1/2 (64)	14
30005-60	72 5/8 (1845)	71 3/8 (1813)	78 5/8 (1997)	14	10 11/16 (271)	2 1/2 (64)	16

"ALL STAINLESS STEEL FOR STRUCTURAL ITEMS SHALL BE 316 TYPE"

ITEM	QTY.	PART NO.	NOMENCLATURE OR DESCRIPTION	SPECIFICATION OR MATERIAL
4	8	30140	LOCKWASHER, SPLIT 3/8	SST
3	8	30249	HHCS 3/8-16 X 3/4	SST
2	1	32523	GUIDE PLATE	
1	1	32537R	FRAME-ROUND WALL MOUNT	

PARTS LIST

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON DECIMALS ± FOR 1.93 .014 ANGLES ±

MATERIAL: A36 STL 304 SST 316 SST

FINISH:

DO NOT SCALE DRAWING

CONTRACT NO.

APPROVALS / DATE

DRAWN: S. ANDERSON 09-21-22

CHECKED: G.LUEDTKE 09-08-24

JAC ENVIRONMENTAL 8680 North Gateway, Santa Ana, California 92707

FRAME-INSTALLATION MODEL 30005 WITH GUIDE PLATE #18"-24# INFLUENT PIPE

SIZE | ZONE | DRAWING NO. | REVISION

D | 53242 | 32537R-CD | A

SCALE: 1/4 | SHEET 1 OF 1

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www.iinaba.com

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CLIENT:

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P.O. BOX 170
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PROJECT:

REFURBISHMENT & UPGRADE OF EXISTING LIFT STATION

36°09'34.23"N, 109°34'27.52"W
CHINLE, ARIZONA, 86503

Registered Professional Engineer — 35254 — ROBERT L. OWENS — Date Signed 10/10/22 — ARIZONA, U.S.A. — Expires 09/30/2023

ONLY VALID WITH ORIGINAL STAMP

REVISIONS:

REV	DESCRIPTION	DATE	DFTR	CHKR

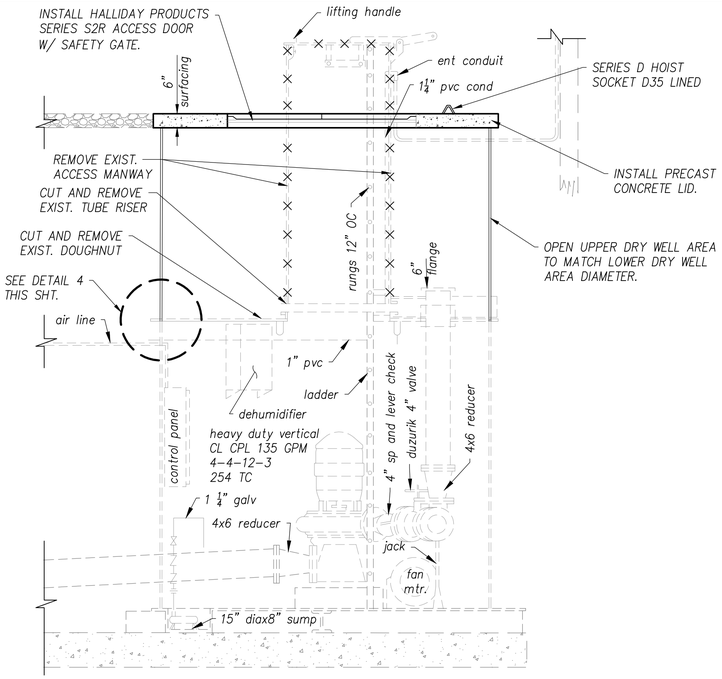
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ENGINEER:	XXX
DRAWING SIZE:	ANSI D
DRAWING SCALE:	NTS

DRAWING TITLE:

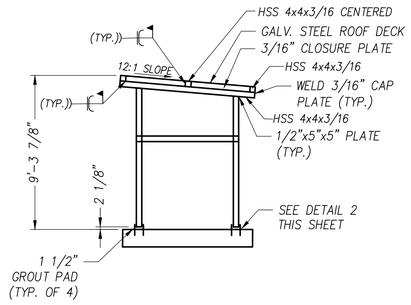
MECHANICAL SECTIONS

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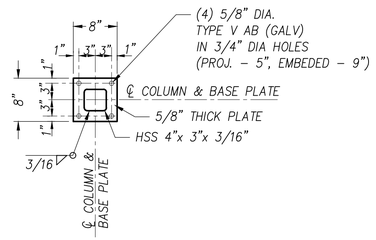
M-02



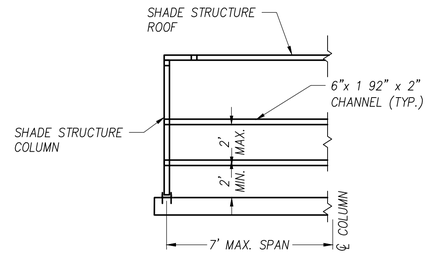
ELEVATION
N.T.S.



1 SHADE STRUCTURE SIDE VIEW
NTUA STANDARD DETAIL N.T.S.

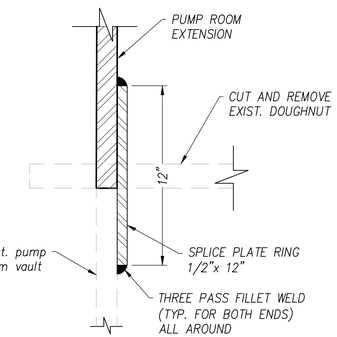


2 POST BASE DETAIL
NTUA STANDARD DETAIL N.T.S.



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

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



4 SPLICE DETAIL
FOR VAULT EXTENSION N.T.S.

NOTE:
1. GRIND ALL CUT STEEL EDGES TO A SMOOTH, TO A CLEAN SURFACE.
2. INSTALL NEW A283 STEEL:
   CYLINDER:
   – HEIGHT TO MATCH EXIST. SURFACE HEIGHT.
   – RADIUS MATCH THE RADIUS ON EXIST. LOWER DRY WELL CYLINDER
3. RECOAT ALL INTERIOR SURFACES W/ ___-___ MILS.
4. RELOCATE ALL INTERIOR CONDUITS TO MANIFOLD SUPPORT ASSEMBLY ON INTERIOR OF NEW CYLINDER

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

SERIES DA PORTABLE HOIST

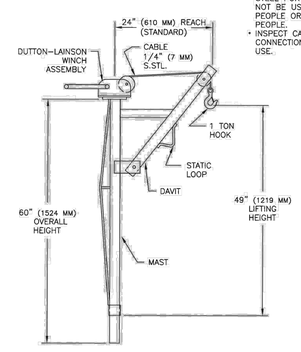
HALLIDAY PRODUCTS
www.HallidayProducts.com
Phone 800-298-1027
Fax 407-298-4534
Sales@HallidayProducts.com

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 (39)
	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.

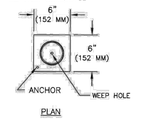


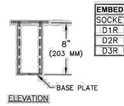
SER-DA-0 8/5/12

SERIES D HOIST SOCKETS

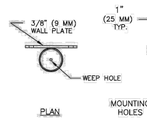
HALLIDAY PRODUCTS
www.HallidayProducts.com
Phone 800-298-1027
Fax 407-298-4534
Sales@HallidayProducts.com

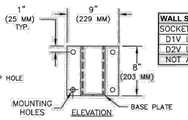
STANDARD FEATURES:
- STAINLESS STEEL TYPE-304 (STANDARD) OR TYPE-316 (OPTIONAL) CONSTRUCTION
- AVAILABLE IN 3 STYLES
- SUPPLIED WITH POLYMER LINING FOR SMOOTHER ROTATION
- 3 YEAR GUARANTEE



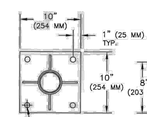


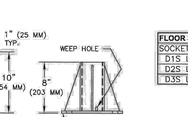
EMBED STYLE HOIST SOCKETS	
SOCKET MODEL #	FOR HOIST MODELS
D1R LINED	D1A AND D1B
D2R LINED	D2A AND D2B
D3R LINED	D3A AND D3B





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





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

NOTES:
MOUNTING HOLES ARE ø3/4" (ø19 MM)

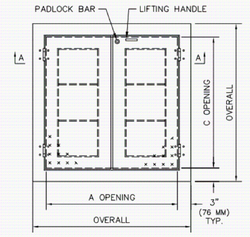
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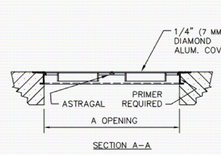
SERIES S2R ACCESS DOOR

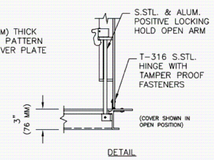
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STANDARD FEATURES:
- AUTO-LOCK T-316 STAINLESS STEEL HOLD OPEN ARM WITH RELEASE HANDLE
- T-316 STAINLESS STEEL HINGES AND ATTACHING HARDWARE
- NON-CORROSIVE PADLOCK BAR
- DOUBLE LEAF CONSTRUCTION
- 300 LBS. PER SQ. FT. LOAD RATING (1464 KG. PER SQ. METER LOAD RATING)
- EXTRUDED ALUMINUM FRAME
- RECESSED LIFTING HANDLE
- LIFETIME GUARANTEE

STANDARD SIZES				
QTY.	MODEL NO.	A DIM. INCHES (MM)	C DIM. INCHES (MM)	UNIT WT. LBS. (KG.)
	S2R4242	42 (1067)	42 (1067)	93 (42)
	S2R4842	48 (1219)	42 (1067)	99 (45)
	S2R4848	48 (1219)	48 (1219)	110 (50)
	S2R5442	54 (1372)	42 (1067)	108 (49)
	S2R5448	54 (1372)	48 (1219)	119 (54)
	S2R5454	54 (1372)	54 (1372)	127 (58)
	S2R6030	60 (1524)	30 (762)	87 (39)
	S2R6036	60 (1524)	36 (914)	100 (45)
	S2R6042	60 (1524)	42 (1067)	115 (52)
	S2R6048	60 (1524)	48 (1219)	130 (59)
	S2R6054	60 (1524)	54 (1372)	143 (65)
	S2R6060	60 (1524)	60 (1524)	158 (72)
	S2R6636	66 (1676)	36 (914)	109 (49)
	S2R6648	66 (1676)	48 (1219)	141 (64)
	S2R7236	72 (1829)	36 (914)	116 (53)
	S2R7242	72 (1829)	42 (1067)	135 (61)
	S2R7248	72 (1829))	48 (1219)	151 (68)
	S2R7254	72 (1829)	54 (1372)	168 (76)
	S2R7260	72 (1829)	60 (1524)	178 (81)







54 x 54
YES
D3A24E (specify 20 ft. cable)

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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°09'34.23"N, 109°34'27.52"W
CHINLE, ARIZONA, 86503

Registered Professional Engineer
35254
ROBERT L. OWENS
Date Signed 09/30/11
ARIZONA, U.S.A.
Expires 09/30/2011
ONLY VALID WITH ORIGINAL STAMP

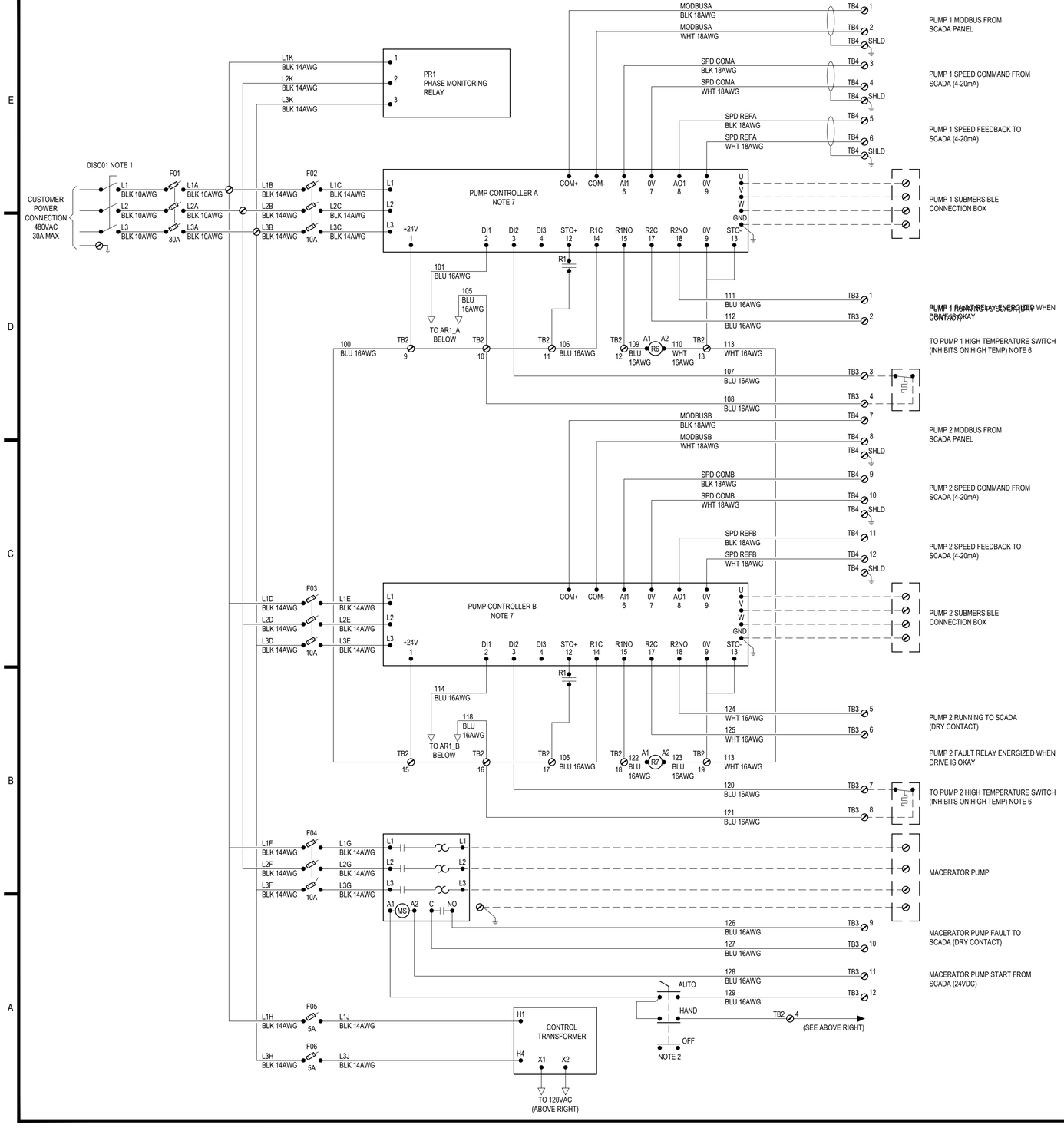
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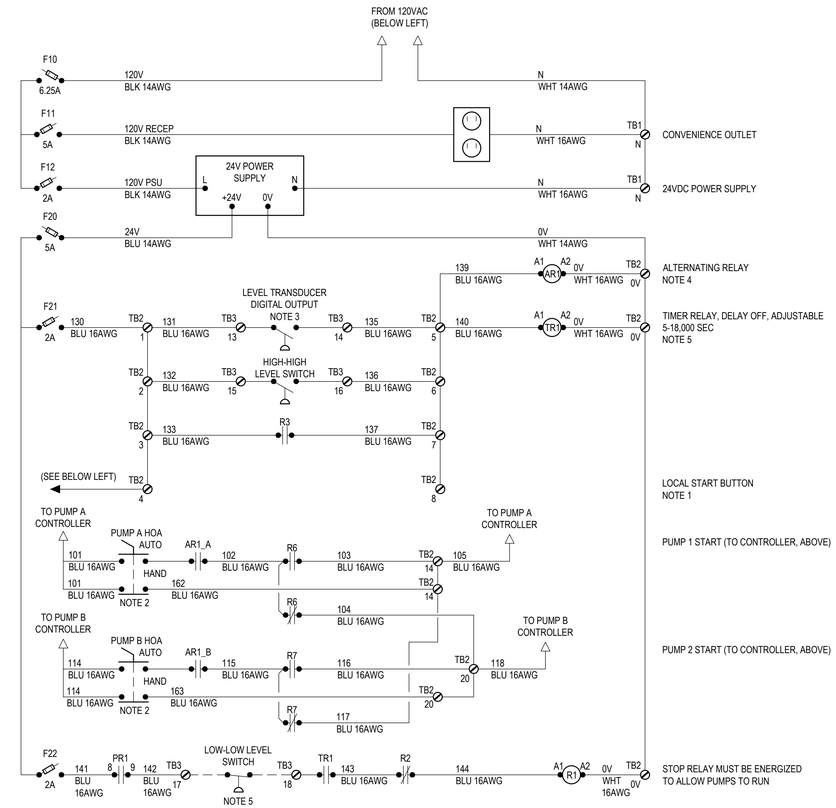
REV	DESCRIPTION	DATE	DFTR	CHKR

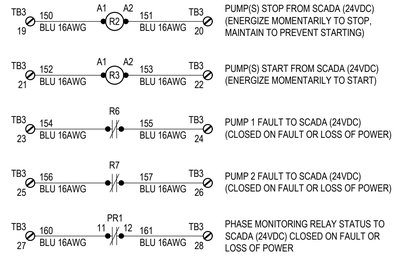
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ENGINEER:	XXX
DRAWING SIZE:	ANSI D
DRAWING SCALE:	NTS

DRAWING TITLE:
STUCTURAL SECTIONS

DRAWING NUMBER:
S-01







NOTES:

1. PANEL IS DESIGNED TO FUNCTION AUTOMATICALLY IF SCADA CONNECTIVITY IS LOST. SCADA COMMANDS CAN STILL CONTROL FUNCTIONALITY IF REQUIRED.
2. LOCAL SWITCHES ARE INSIDE ENCLOSURE ON SWING OUT PANEL AND CAN ONLY BE ACCESSED FROM INSIDE THE ENCLOSURE.
3. 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.
4. ALTERNATING RELAY SWAPS ACTIVE OUTPUT (A OR B) ON EACH ENERGIZE CYCLE.
5. SYSTEM OPERATION RELIES ON SEVERAL INSTRUMENTS TO PROVIDE REDUNDANT FUNCTIONALITY.
   - 5.1 LEVEL TRANSDUCER PROVIDES "HIGH" LEVEL PUMP START
   - 5.2 LEVEL HIGH-HIGH LEVEL FLOAT SWITCH PROVIDES PUMP START IF THE LEVEL TRANSDUCER FAILS.
   - 5.3 LEVEL TRANSDUCER PROVIDES "LOW" LEVEL PUMP STOP
   - 5.4 LEVEL LOW-LOW LEVEL FLOAT SWITCH PROVIDES PUMP STOP IF THE LEVEL TRANSDUCER FAILS.
   - 5.5 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.
6. 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.
7. PUMP CONTROLLER IS CONFIGURED VIA THE FOLLOWING VALUES:
   - 7.1. RUN AT MAXIMUM SET SPEED UNLESS AN ANALOG INPUT SPEED COMMAND IS RECEIVED FROM SCADA.
     - 7.1.1 MAXIMUM SPEED, MINIMUM START SPEED AND SPEED RAMP VALUES SET IN THE FIELD DURING COMMISSIONING
   - 7.2. DI1 IS CONFIGURED AS A MOMENTARY START SIGNAL TO START PUMP OPERATION.
   - 7.3. DI2 IS PUMP ALARM STATUS, WHICH TRIGGERS A PUMP FAULT AND DISABLES THE SPEED CONTROLLER.
   - 7.4. AI1 IS SPEED COMMAND FROM SCADA
   - 7.5. AO1 IS SPEED REFERENCE TO SCADA
   - 7.6. R1 IS DRIVE/PUMP FAULT
   - 7.7. R2 IS PUMP RUNNING STATUS
8. 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".
9. 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.
   - 9.1 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.
   - 9.2 ALL THREE SWITCHES SHOULD BE LEFT IN "AUTO" AT ALL TIMES WHEN THE PANEL IS UN-SUPERVISED.
   - 9.3 PLACING ANY DEVICE IN "HAND" SHOULD ONLY BE DONE WHILE THE PANEL IS SUPERVISED.
   - 9.4 PLACING A PUMP IN "HAND" STILL MAINTAINS ALL FUNCTIONS THAT AUTOMATICALLY STOP THE PUMP INCLUDING FAULTS.

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FarminGton, NM 87499

ENCORUS GROUP
encorus.com

CLIENT:
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CHINLE, ARIZONA 86503

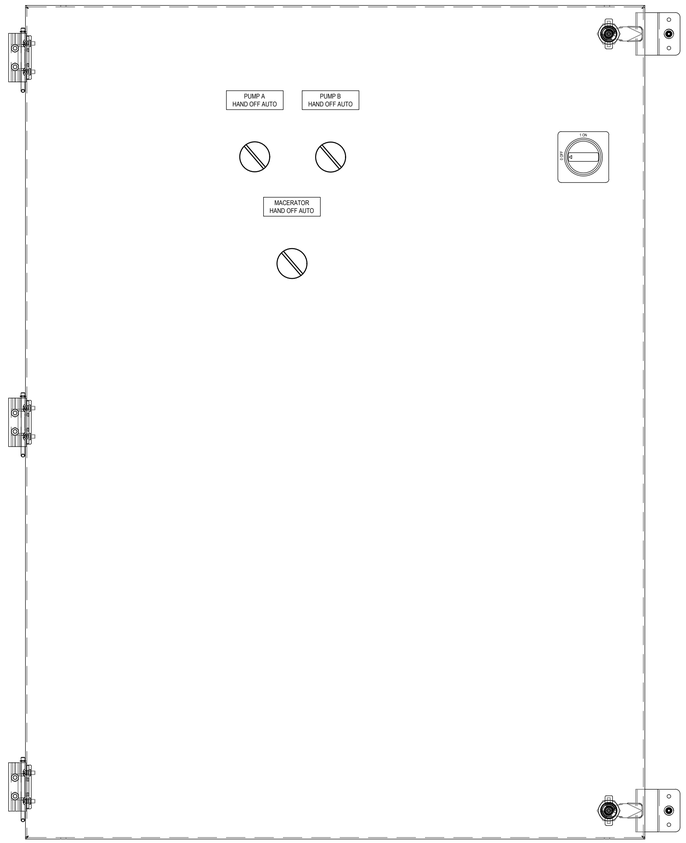
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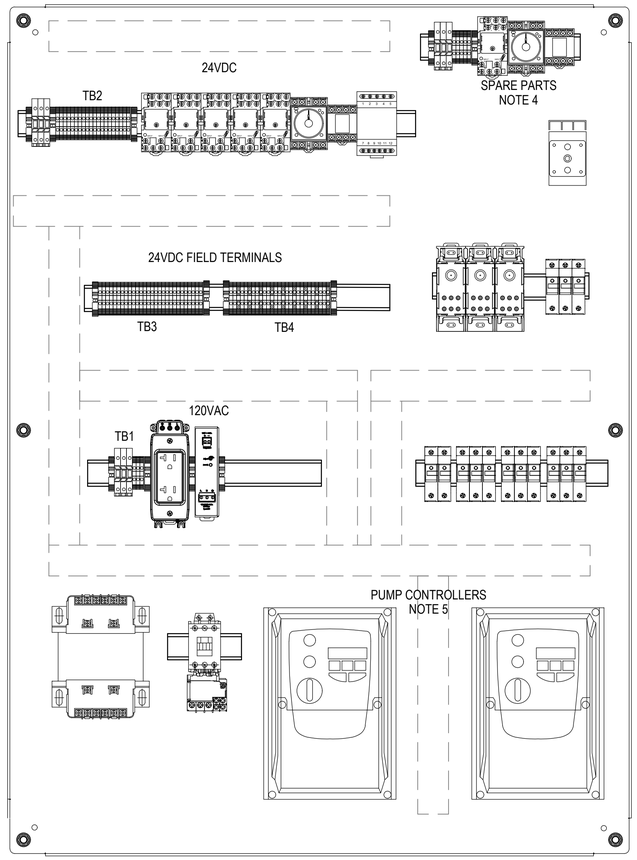
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ENGINEER:	GMC
DRAWING SCALE:	NTS
DRAWING SIZE:	ANSI D

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

DRAWING NUMBER:
EI603



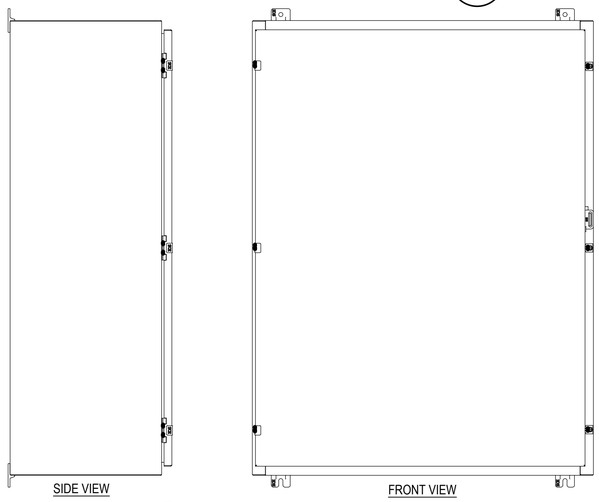
INTERIOR DEAD PANEL LAYOUT



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"

NOTES:

1. PANEL EXTERNAL LABELS, WARNINGS AND TAGGING TO BE DETERMINED FOR EACH SITE. ENCLOSURE MUST INDICATE POWER DISCONNECT IS MOUNTED INTERNALLY.
2. PANEL EXTERIOR HAS CAPABILITY FOR EXTERNALLY MOUNTED PADLOCK TO SECURE THE EXTERIOR DOOR. NO CONTROLS ARE ACCESSIBLE ON THE OUTSIDE OF THE ENCLOSURE.
3. 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.
4. 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.
5. 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.
6. 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	FUJI ELECTRIC	SC-E03G-24VDC	IEC CONTACTOR, 24VDC COIL, 12A FRAME
15	1	FUJI 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	FUJI ELECTRIC	MS4SM-CE-ADC	TIMER RELAY, 24VDC, DPDT, ADJUSTABLE
20	1	FUJI 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	FUJI 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

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	FUJI ELECTRIC	MS4SM-CE-ADC	TIMER RELAY, 24VDC, DPDT, ADJUSTABLE
6	1	FUJI 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

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encorus.com

CLIENT:
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36°09'34.23"N, 109°34'27.52"W
CHINLE, ARIZONA 86503

REVISIONS:

REV	DESCRIPTION	DATE	DFTR	CHKR
0	100% SUBMISSION	2020-10-06	SBV	GMC

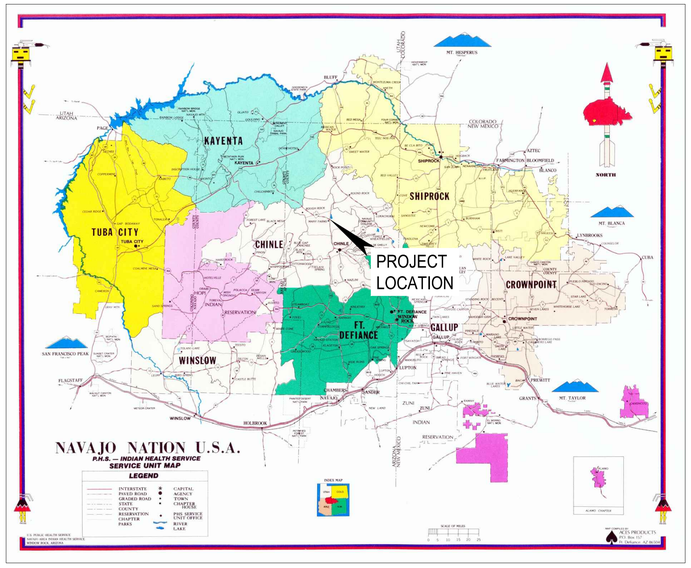
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ENGINEER:	GMC
DRAWING SCALE:	NTS
DRAWING SIZE:	ANSI D

DRAWING TITLE:
CHINLE SITE PUMP PANEL 480V FABRICATION DIAGRAM

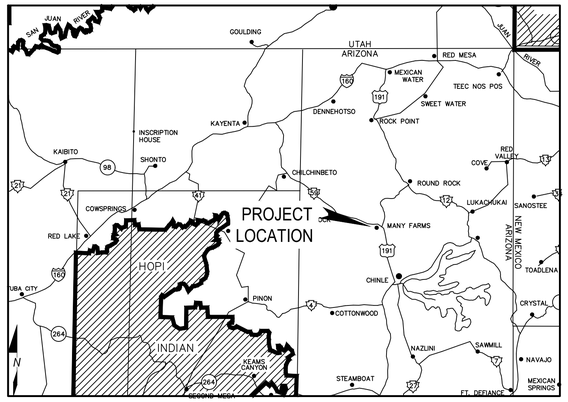
DRAWING NUMBER:
EI703

REFURBISHMENT & UPGRADE OF EXISTING LIFT STATION

MANY FARMS CHAPTER, APACHE COUNTY, ARIZONA
OCTOBER 2020



SITE LOCATION MAP
(NOT TO SCALE)



VICINITY MAP
(NOT TO SCALE)

100% PLANS
ISSUED FOR CONSTRUCTION
BY:LASPAAS DATE:Oct 12, 2020 4:40pm

PREPARED FOR:

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

PREPARED BY:

iiná bá, Inc.
www.iinaba.com
1812 Schofield Lane Farmington, NM 87401
P.O. BOX 2606 Farmington, NM 87499

KITCHELL

eec

ENCORUS GROUP

Registered Professional Engineer (Civil)
CERTIFICATE NO.
50207
ROBERT J RUNGE II
Date Signed
ARIZONA U.S.A.
EXPIRES: _____

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

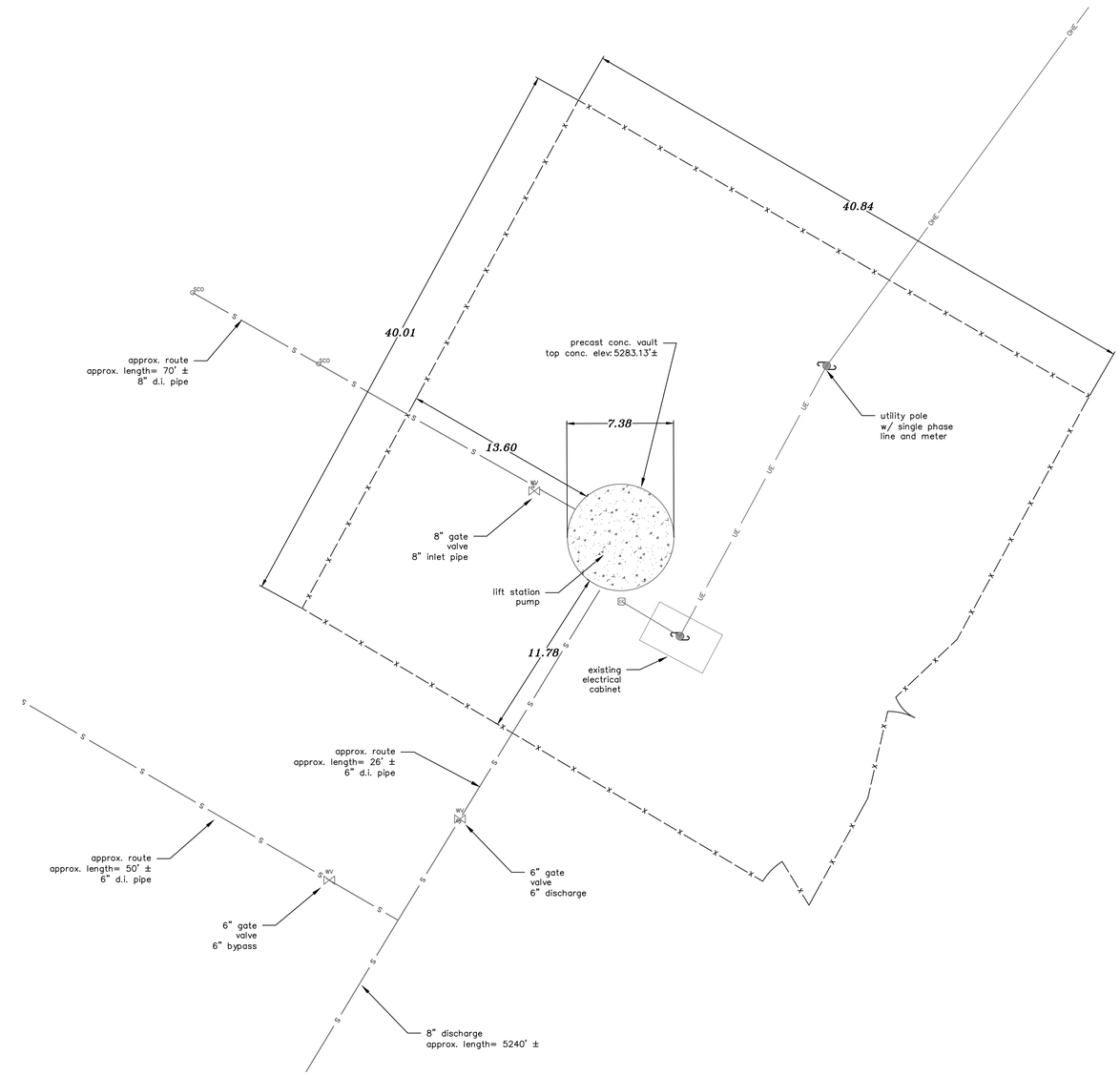
IBI #20-050-02

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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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

ONLY VALID WITH ORIGINAL STAMP

REVISIONS:

REV	DESCRIPTION	DATE	DFTR	CHKR

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

5 2.5 0 5

DRAWING TITLE:
EXISTING FACILITY PLAN

DRAWING NUMBER:
G-01

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



NORTH

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ENGINEER:	XXX
DRAWING SIZE:	ANSI D
DRAWING SCALE:	NTS

0 0 0 0

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

5 2.5 0 5

DRAWING TITLE:

BILL OF MATERIALS

DRAWING NUMBER:

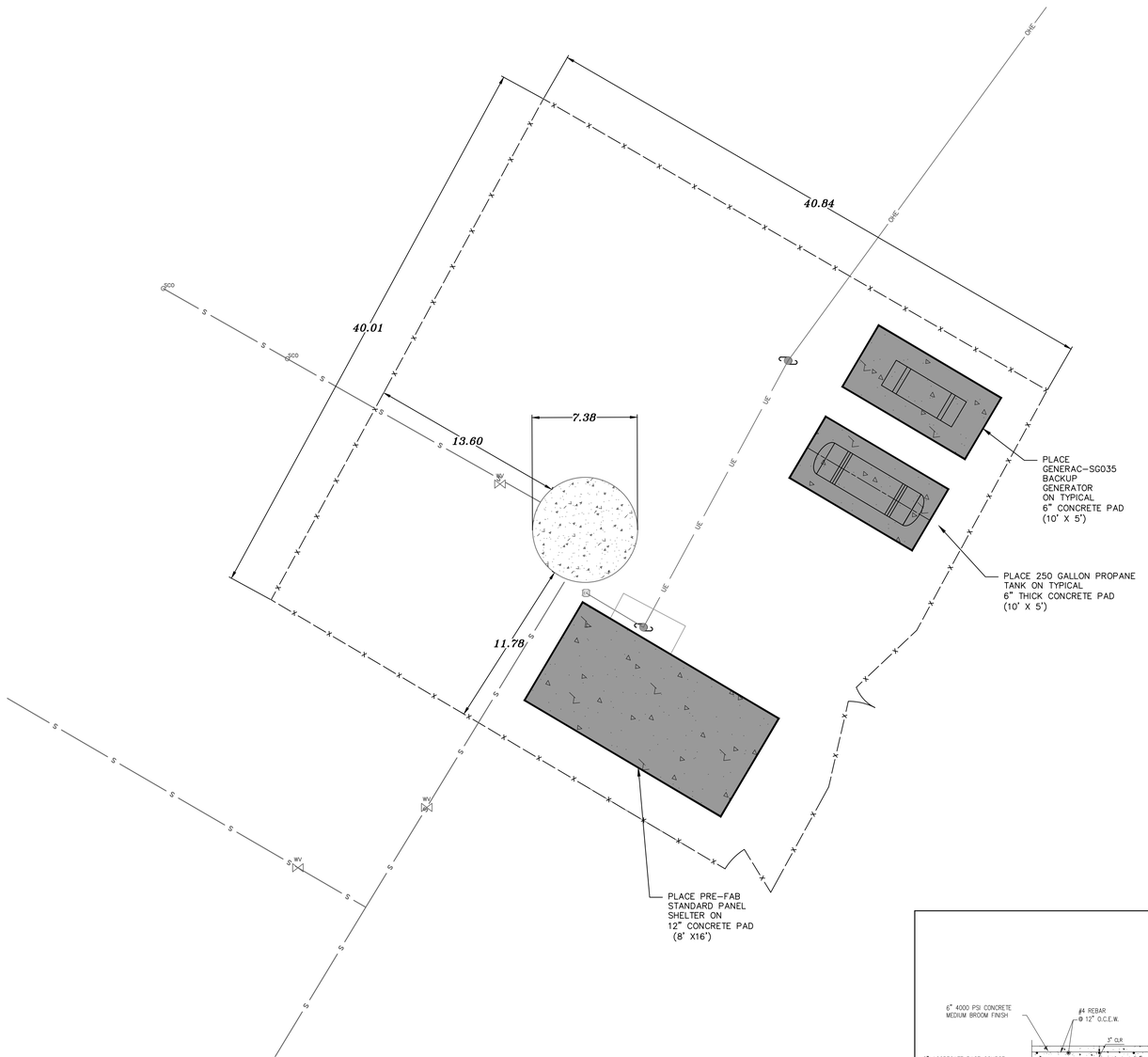
G-03

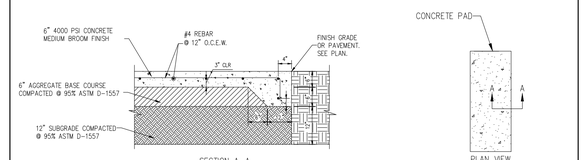
LEGEND

- TRACT LIMITS (SEE NOTE 4)
- EXISTING GRADE CONTOUR
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- W — DOMESTIC WATER
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- WV — 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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CONCRETE PAD
NTS

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

Registered Professional Engineer (Civil)
CERTIFICATE NO.
50207
ROBERT J RUNGE II
Date Signed
ARIZONA U.S.A.
EXPIRES: _____
ONLY VALID WITH ORIGINAL STAMP

REVISIONS:

REV	DESCRIPTION	DATE	DFTR	CHKR

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

5 2.5 0 5

DRAWING TITLE:
SITE PLAN

DRAWING NUMBER:
G-04

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

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.
   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.

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

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. Regreasable 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.

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
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

above, under normal operation. Motor horsepowers 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

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 PIMPED 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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Licensed Professional Engineer (Civil) 35254 ROBERT L. OWENS Date Signed 10/1/20 ARIZONA, U.S.A. Expires 09/30/2021

REVISIONS:

REV.	DESCRIPTION	DATE	DFTR	CHKR

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

5 2.5 0 5

DRAWING TITLE:
MECHANICAL SPECIFICATIONS

DRAWING NUMBER:
G-05

LEGEND

TRACT LIMITS (SEE NOTE 4)
J-3 J-4, J-5 FINISHED GRADE CONTOUR
J-1 EDGE OF GRAVEL
J-2 DOMESTIC WATER
J-6 UNDERGROUND ELECTRIC
OHE OVERHEAD ELECTRIC
PROPANE TANK
EXISTING FENCE
LIGHT POLE
TELEPHONE PEDESTAL
SEWER CLEANOUT
WATER VALVE
WATER METER
WATER MANHOLE
WATER SHUTOFF
WATER SPIGOT
ANTENNA
ELECTRIC JUNCTION BOX
VENT PIPE
GRAVEL SURFACE
CONCRETE SURFACE

INSTRUMENT SYMBOL IDENTIFIERS

J-1: IDENTIFICATION LETTERS (SEE TABLE BELOW)
J-2: LOOP NUMBER
J-3: VENDOR DESIGNATOR (NOTE 3)
J-4: FUNCTION BLOCK (SEE TABLE BELOW)
J-5: PANEL NUMBER
J-6: HANDSWITCH DESIGNATOR (SEE BELOW)

	FIRST LETTER		SUCCEEDING LETTERS		
	MEASURED OR INITIATING VARIABLE	MODIFIER	READOUT OR PASSIVE FUNCTION	OUTPUT FUNCTION	MODIFIER
A	ANALYSIS		ALARM		
B	BURNER, COMBUSTION		USER'S CHOICE	USER'S CHOICE	USER'S CHOICE
C	USER'S CHOICE			CONTROL	CLOSED
D	DENSITY	DIFFERENTIAL	DAMPER		
E	VOLTAGE		SENSOR (PRIMARY ELEMENT)		
F	FLOW RATE	RATIO (FRACTION)			
G	USER'S CHOICE		GLASS, VIEWING DEVICE		
H	HAND				HIGH
I	CURRENT (ELECTRICAL)		INDICATE		
J	POWER	SCAN			
K	TIME, TIME SCHEDULE	TIME RATE OF CHANGE		CONTROL STATION	
L	LEVEL		LIGHT		LOW
M	MOISTURE	MOMENTARY			MIDDLE, INTERMEDIATE
N	USER'S CHOICE		USER'S CHOICE	USER'S CHOICE	USER'S CHOICE
O	USER'S CHOICE		ORIFICE, RESTRICTION		OPEN
P	PRESSURE, VACUUM		POINT (TEST) CONNECTION		
Q	QUANTITY	INTEGRATE, TOTALIZE			
R	RADIATION		RECORD		
S	SPEED, FREQUENCY	SAFETY	SWITCH		
T	TEMPERATURE			TRANSMIT	
U	MULTIVARIABLE		MULTIFUNCTION	MULTIFUNCTION	MULTIFUNCTION
V	VIBRATION, MECHANICAL ANALYSIS			VALVE, DAMPER, OR LOUVER	
W	WEIGHT, FORCE		WELL		
X	UNCLASSIFIED	X AXIS	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED
Y	EVENT, STATE, PRESENCE	Y AXIS		RELAY, COMPUTE, CONVERT	
Z	POSITION, DIMENSION	Z AXIS		DRIVER, ACTUATOR, UNCLASSIFIED FINAL CONTROL ELEMENT	

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 INVESTIGATION 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.

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

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
1–0	ON–OFF		

INSTRUMENT SERVICES

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

PLC INPUT/OUTPUT

- DISCRETE INPUT
- DISCRETE OUTPUT
- ANALOG INPUT
- 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
- I2/B — REFERENCES TO OTHER SHEET
- LINE CONTINUATION
- DRAWING REFERENCE
- 24" BW — 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 — OR — ELECTRICAL

- CONNECTED
- NOT CONNECTED
- 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
- M: MOTOR
- CYLINDER OPERATOR
- S: SOLENOID
- SV: 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
- PERISTALTIC PUMP
- M: MIXER
- TURBINE 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
- P: PURGE
- DRAIN
- THERMOMETER WELL
- TORQUE SWITCH
- –
- I 3: 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
- * AV – AIR VALVE, F – FILTER, T – TRAP, FH – FIRE HYDRANT
- WATER

NOTES

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

iiná bá, Inc.
www.iinaba.com
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

Registered Professional Engineer — 35254 — ROBERT L. OWENS — New Mexico — Arizona, U.S.A. — Date Signed 09/30/20 — Expires 09/30/2021
ONLY VALID WITH ORIGINAL STAMP

REVISIONS:

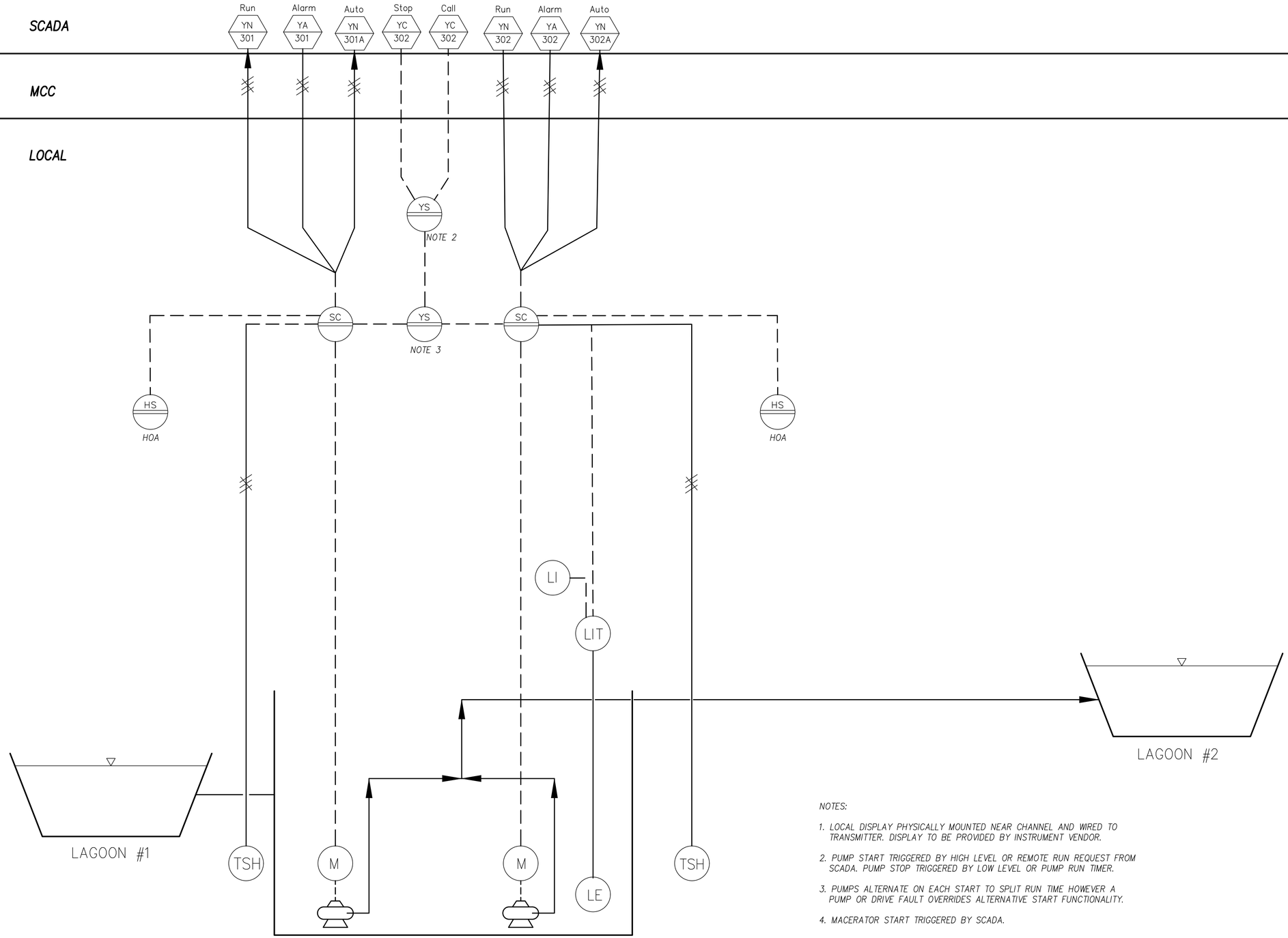
REV.	DESCRIPTION	DATE	DFTR	CHKR

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

5 2.5 0 5

DRAWING TITLE:
INSTRUMENTATION AND CONTROL STANDARDS

DRAWING NUMBER:
D-01



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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Registered Professional Engineer (Civil)
35254
ROBERT L. OWENS
Date Signed 10/14/20
ARIZONA, U.S.A.
Expires 09/30/2021

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

5 2.5 0 5

DRAWING TITLE:
PROCESS AND INSTRUMEBTATION DIAGRAM

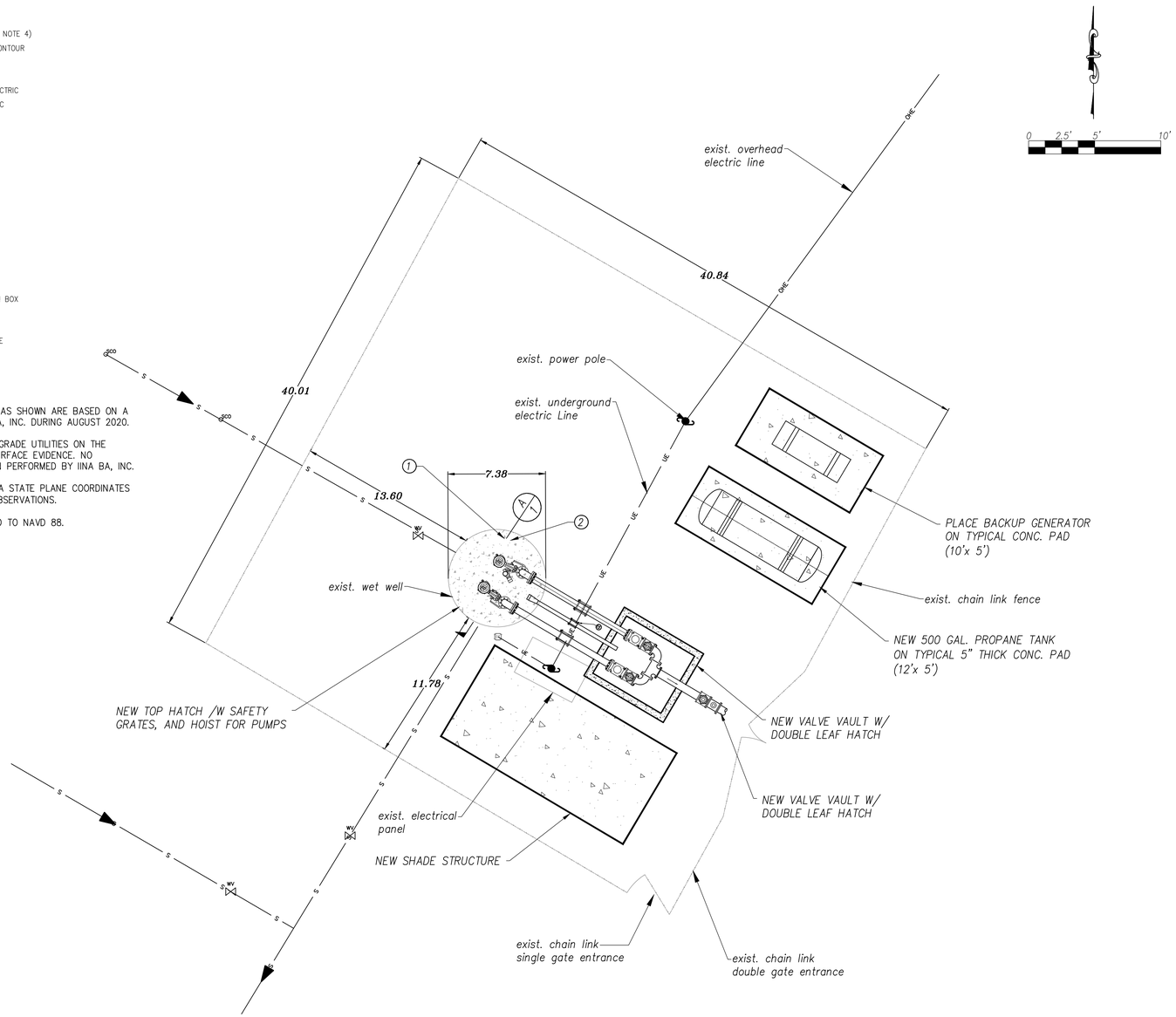
DRAWING NUMBER:
D-02

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 — EXISTING 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:

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4. ELEVATIONS AS SHOWN ARE REFERENCED TO NAVD 88.



SITE PLAN

EXIST. COMPONENTS	
1	existing vertical column separated motor drive submersible pumps

NEW COMPONENTS	
2	NEW VERTICAL NON-CLOG CLOSE-CONNECTED SUBMERSIBLE PUMPNG UNITS

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Registered Professional Engineer (Civil)
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Expires 09/30/2021

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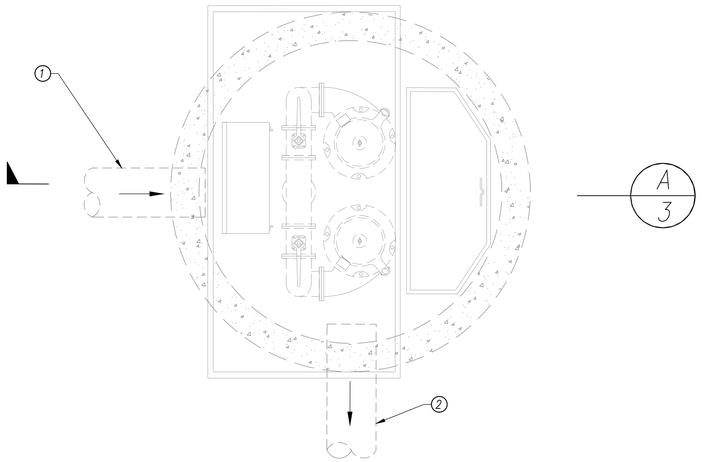
REV.	DESCRIPTION	DATE	DFTR	CHKR

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

5 2.5 0 5

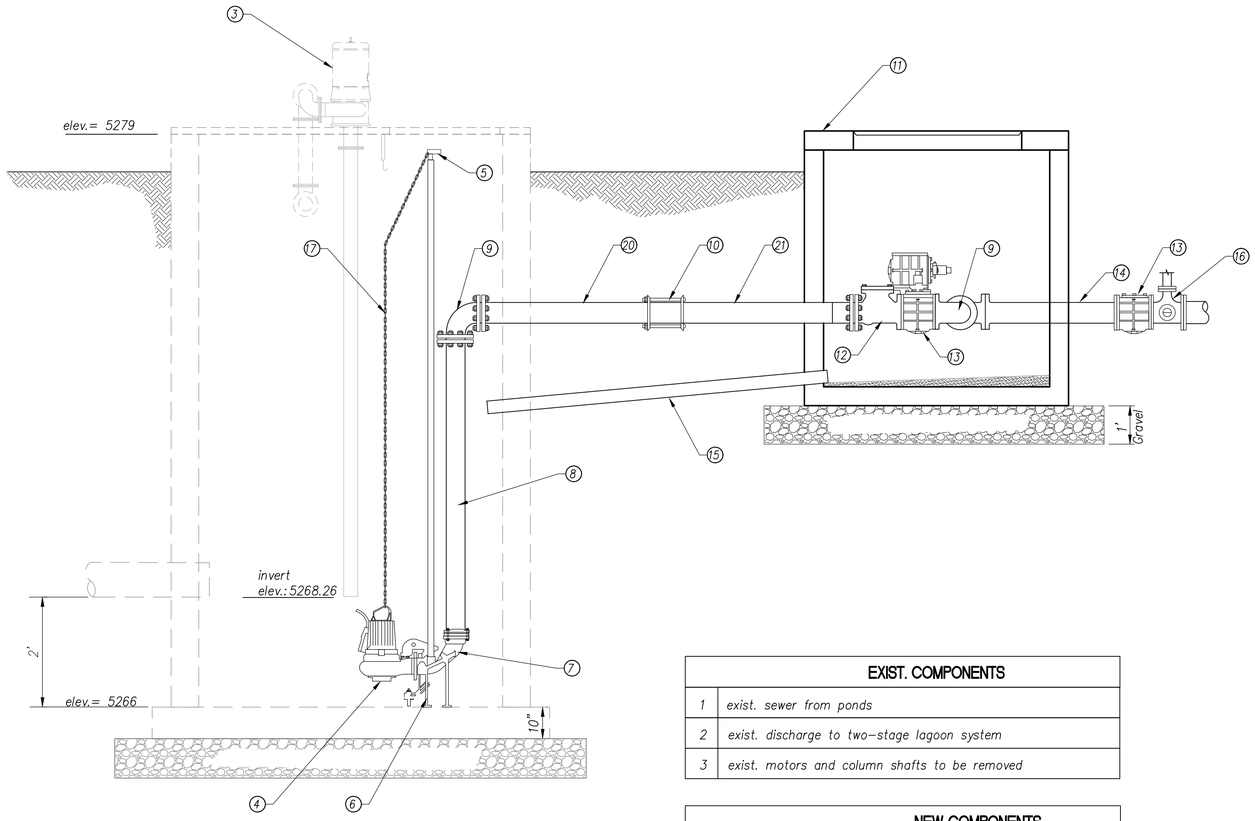
DRAWING TITLE:
MECHANICAL SITE PLAN

DRAWING NUMBER:
M-01

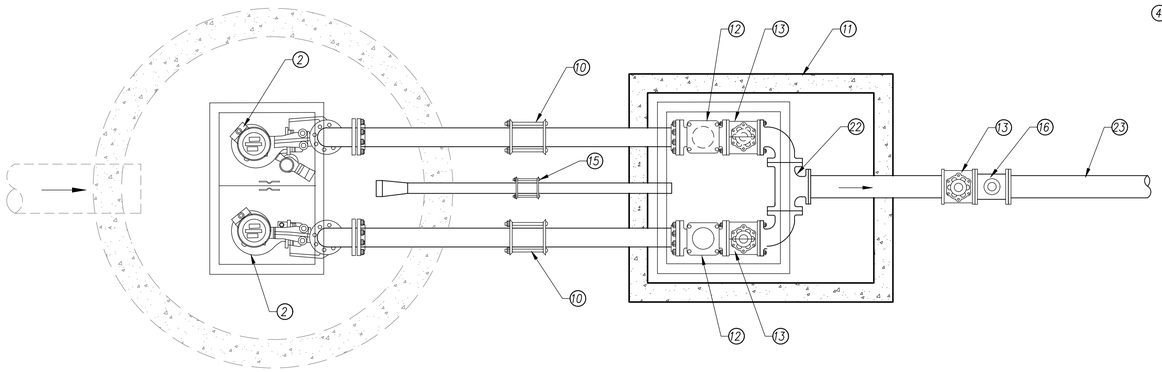


A/3

LIFT STATION
N.T.S.



SECTION "A"
N.T.S.



PLAN VIEW
N.T.S.

SK1-Many Farms

Halliday Products	Dimensions	
Series S1R Access Door w/ safety grate	3654	
Series D Hoist Sockets	D3S Lined	*this is just the socket, does NTUA need a hoist?
Series Portable Hoist	D3A or D3B?	*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?**	

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

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10/16/20

REVISIONS:

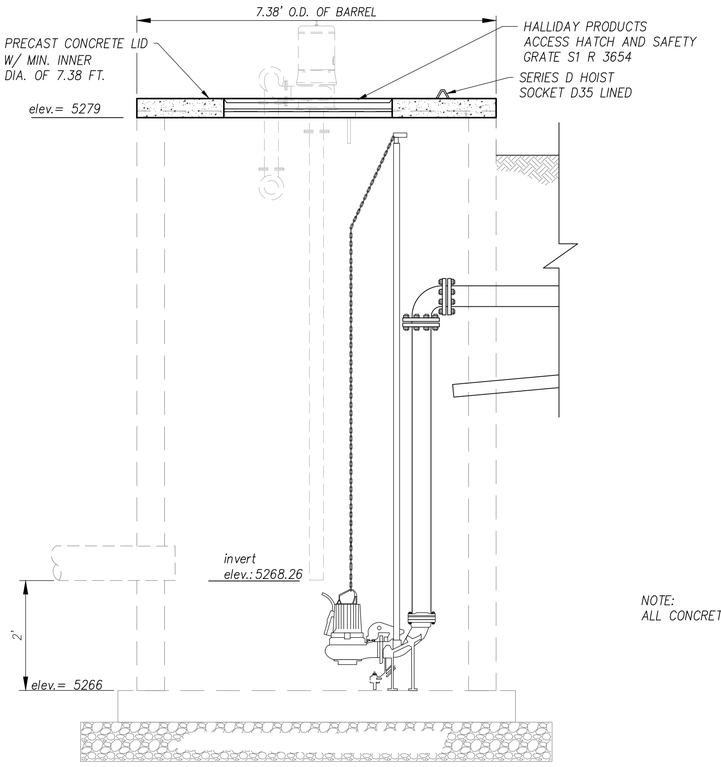
REV	DESCRIPTION	DATE	DFTR	CHKR

PROJECT NUMBER:	20-050-02
ENGINEER:	XXX
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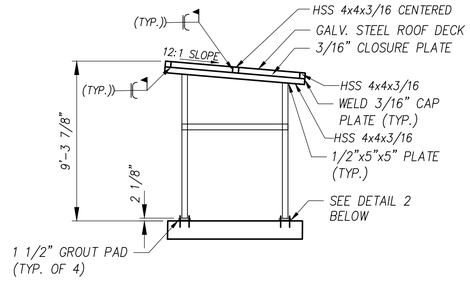
5 2.5 0 5

DRAWING TITLE:
MECHANICAL SECTIONS

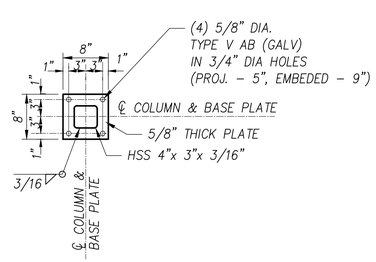
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M-02



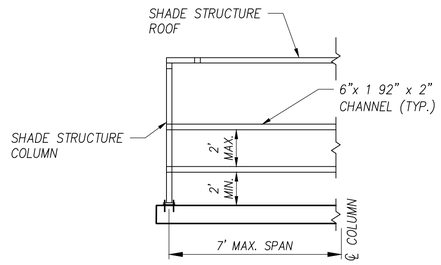
WET WELL SECTION
N.T.S.



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



2 POST BASE 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.

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

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

SERIES DA PORTABLE HOIST

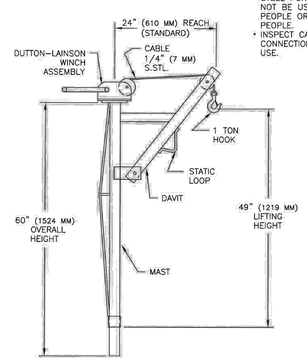
STANDARD FEATURES:
- TYPE-304 STAINLESS STEEL CONSTRUCTION
- 30 FEET (9 METERS) OF 1/4" (7 MM) STAINLESS STEEL CABLE
- GALVANIZED 1 TON HOOK
- DUTTON-LAINSON MARINE GRADE BRAKE WINCH
- 3 YEAR GUARANTEE

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

HALLIDAY PRODUCTS
www.HallidayProducts.com
Phone 800-298-1027
Fax 407-298-4534
Sales@HallidayProducts.com

STANDARD SIZES			
QTY.	MODEL NO.	MAX LOAD LBS (KG.)	UNIT WT. LBS. (KG.)
	D1A24C	500 (227)	85 (30)
	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.

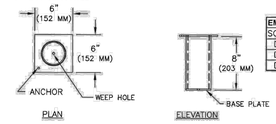


SER-DA-0 6/5/12

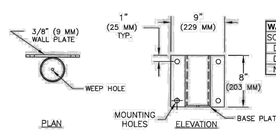
SERIES D HOIST SOCKETS

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

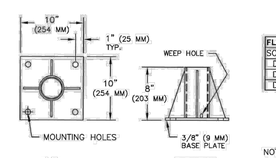
HALLIDAY PRODUCTS
www.HallidayProducts.com
Phone 800-298-1027
Fax 407-298-4534
Sales@HallidayProducts.com



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



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



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

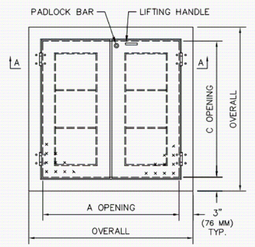
NOTES:
MOUNTING HOLES ARE ø3/4" (ø19 MM)

SER-D-0 6/5/12

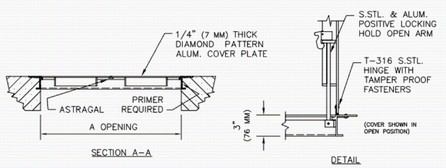
SERIES S2R ACCESS DOOR

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 (1464 KG. PER SQ. METER LOAD RATING)
- EXTRUDED ALUMINUM FRAME
- RECESSED LIFTING HANDLE
- LIFETIME GUARANTEE

HALLIDAY PRODUCTS
www.HallidayProducts.com
Phone 800-298-1027
Fax 407-298-4534
Sales@HallidayProducts.com



STANDARD SIZES				
QTY.	MODEL NO.	A DIM. INCHES (MM)	C DIM. INCHES (MM)	UNIT WT. LBS. (KG.)
	S2R4242	42 (1067)	42 (1067)	93 (42)
	S2R4842	48 (1219)	42 (1067)	99 (45)
	S2R4848	48 (1219)	48 (1219)	110 (50)
	S2R5442	54 (1372)	42 (1067)	108 (49)
	S2R5448	54 (1372)	48 (1219)	119 (54)
➔	S2R5454	54 (1372)	54 (1372)	127 (58)
	S2R6030	60 (1524)	30 (762)	87 (39)
	S2R6036	60 (1524)	36 (914)	100 (45)
	S2R6042	60 (1524)	42 (1067)	115 (52)
	S2R6048	60 (1524)	48 (1219)	130 (59)
	S2R6054	60 (1524)	54 (1372)	143 (65)
	S2R6060	60 (1524)	60 (1524)	158 (72)
	S2R6636	66 (1676)	36 (914)	109 (49)
	S2R6648	66 (1676)	48 (1219)	141 (64)
	S2R7236	72 (1829)	36 (914)	116 (53)
	S2R7242	72 (1829)	42 (1067)	135 (61)
	S2R7248	72 (1829))	48 (1219)	151 (68)
	S2R7254	72 (1829)	54 (1372)	168 (76)
	S2R7260	72 (1829)	60 (1524)	178 (81)



iina ba Response

54 x 54
YES
D3A24E (specify 20 ft. cable)

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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

Registered Professional Engineer (Civil)
35254
ROBERT L. OWENS
Date Signed 10/8/20
ARIZONA, U.S.A.
Expires 09/30/2021

REVISIONS:

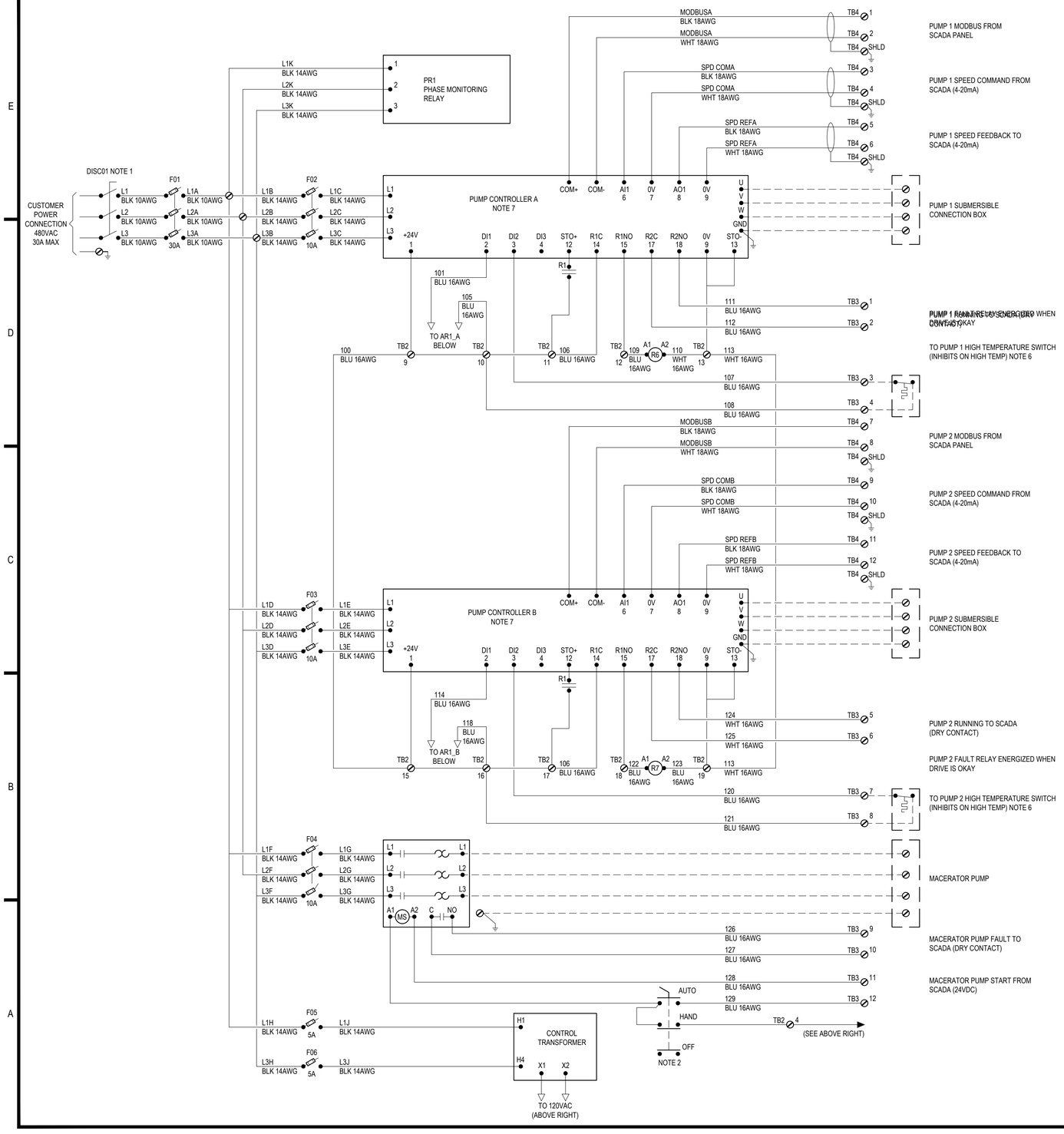
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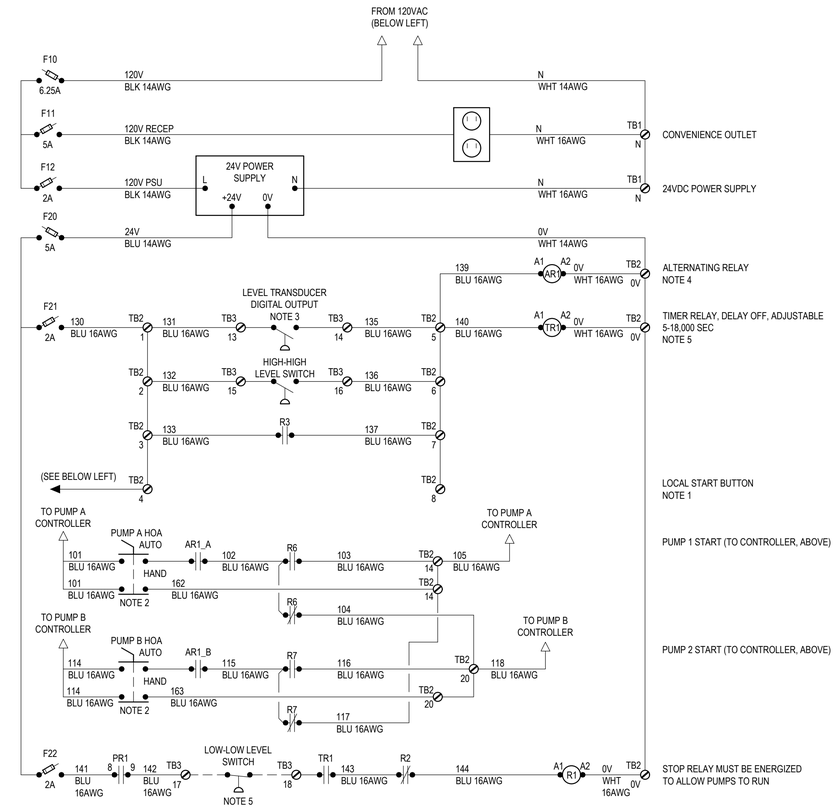
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ENGINEER:	XXX
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DRAWING SCALE:	1" = 5'

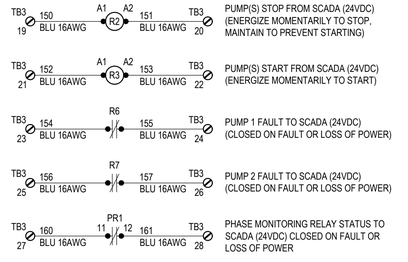
5 2.5 0 5

DRAWING TITLE:
SPECIFICATIONS DETAILS

DRAWING NUMBER:
S-01







NOTES:

1. PANEL IS DESIGNED TO FUNCTION AUTOMATICALLY IF SCADA CONNECTIVITY IS LOST. SCADA COMMANDS CAN STILL CONTROL FUNCTIONALITY IF REQUIRED.
2. LOCAL SWITCHES ARE INSIDE ENCLOSURE ON SWING OUT PANEL AND CAN ONLY BE ACCESSED FROM INSIDE THE ENCLOSURE.
3. 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.
4. ALTERNATING RELAY SWAPS ACTIVE OUTPUT (A OR B) ON EACH ENERGIZE CYCLE.
5. SYSTEM OPERATION RELIES ON SEVERAL INSTRUMENTS TO PROVIDE REDUNDANT FUNCTIONALITY.
   - 5.1 LEVEL TRANSDUCER PROVIDES "HIGH" LEVEL PUMP START
   - 5.2 LEVEL HIGH-HIGH LEVEL FLOAT SWITCH PROVIDES PUMP START IF THE LEVEL TRANSDUCER FAILS.
   - 5.3 LEVEL TRANSDUCER PROVIDES "LOW" LEVEL PUMP STOP
   - 5.4 LEVEL LOW-LOW LEVEL FLOAT SWITCH PROVIDES PUMP STOP IF THE LEVEL TRANSDUCER FAILS.
   - 5.5 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.
6. 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.
7. PUMP CONTROLLER IS CONFIGURED VIA THE FOLLOWING VALUES:
   - 7.1. RUN AT MAXIMUM SET SPEED UNLESS AN ANALOG INPUT SPEED COMMAND IS RECEIVED FROM SCADA.
     - 7.1.1 MAXIMUM SPEED, MINIMUM START SPEED AND SPEED RAMP VALUES SET IN THE FIELD DURING COMMISSIONING
   - 7.2. DI1 IS CONFIGURED AS A MOMENTARY START SIGNAL TO START PUMP OPERATION.
   - 7.3. DI2 IS PUMP ALARM STATUS, WHICH TRIGGERS A PUMP FAULT AND DISABLES THE SPEED CONTROLLER.
   - 7.4. AI1 IS SPEED COMMAND FROM SCADA
   - 7.5. AO1 IS SPEED REFERENCE TO SCADA
   - 7.6. R1 IS DRIVE/PUMP FAULT
   - 7.7. R2 IS PUMP RUNNING STATUS
8. 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".
9. 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.
   - 9.1 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.
   - 9.2 ALL THREE SWITCHES SHOULD BE LEFT IN "AUTO" AT ALL TIMES WHEN THE PANEL IS UN-SUPERVISED.
   - 9.3 PLACING ANY DEVICE IN "HAND" SHOULD ONLY BE DONE WHILE THE PANEL IS SUPERVISED.
   - 9.4 PLACING A PUMP IN "HAND" STILL MAINTAINS ALL FUNCTIONS THAT AUTOMATICALLY STOP THE PUMP INCLUDING FAULTS.

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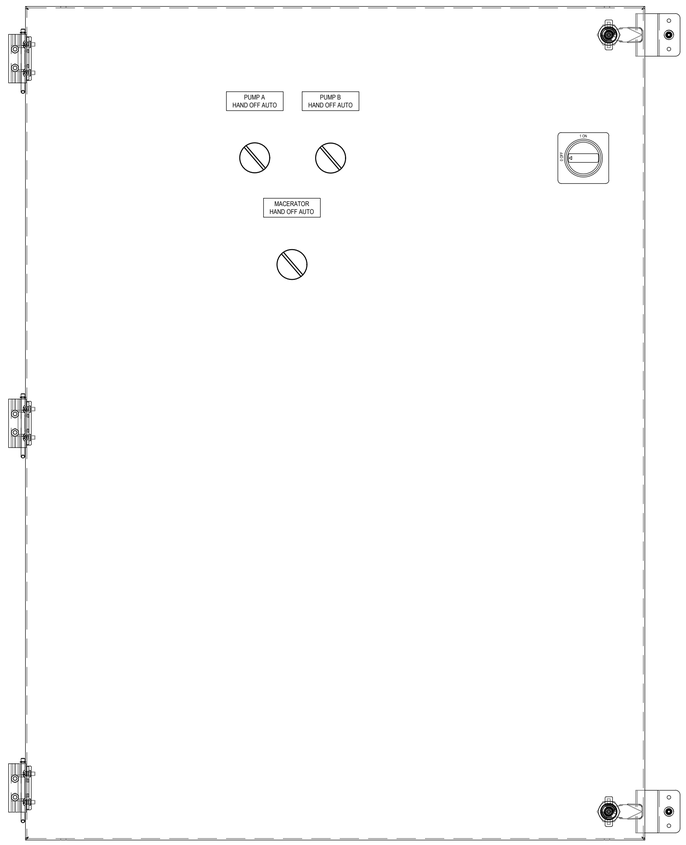
REVISIONS:

REV	DESCRIPTION	DATE	DFTR	CHKR
0	100% SUBMISSION	2020-10-06	SBV	GMC

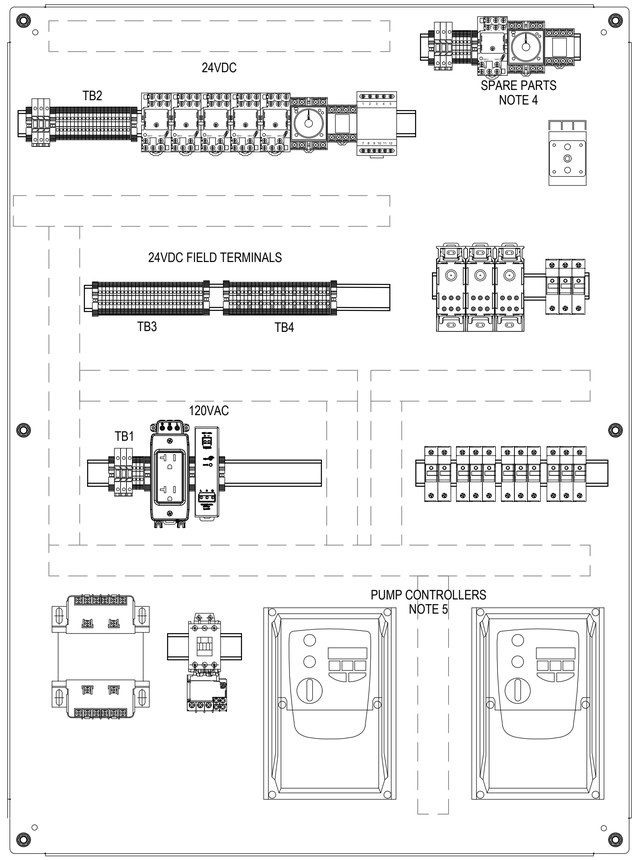
PROJECT NUMBER:	20244
ENGINEER:	GMC
DRAWING SCALE:	NTS
DRAWING SIZE:	ANSI D

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

DRAWING NUMBER:
EI604



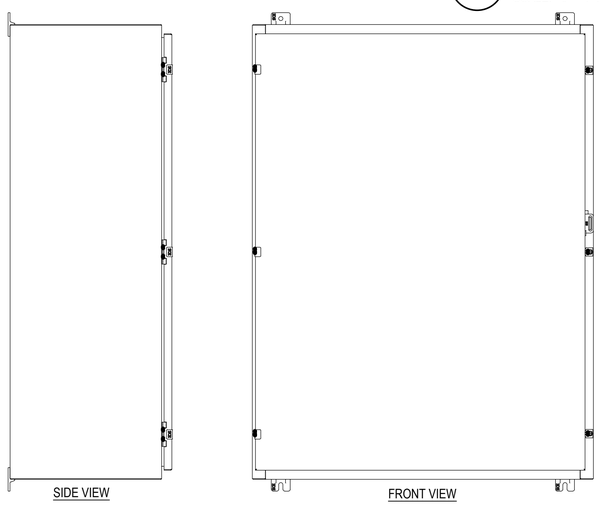
INTERIOR DEAD PANEL LAYOUT



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	FUJI ELECTRIC	MS4SM-CE-ADC	TIMER RELAY, 24VDC, DPDT, ADJUSTABLE
6	1	FUJI 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:

1. PANEL EXTERNAL LABELS, WARNINGS AND TAGGING TO BE DETERMINED FOR EACH SITE. ENCLOSURE MUST INDICATE POWER DISCONNECT IS MOUNTED INTERNALLY.
2. PANEL EXTERIOR HAS CAPABILITY FOR EXTERNALLY MOUNTED PADLOCK TO SECURE THE EXTERIOR DOOR. NO CONTROLS ARE ACCESSIBLE ON THE OUTSIDE OF THE ENCLOSURE.
3. 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.
4. 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.
5. 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.
6. 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	FUJI ELECTRIC	SC-E03G-24VDC	IEC CONTACTOR, 24VDC COIL, 12A FRAME
15	1	FUJI 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	FUJI ELECTRIC	MS4SM-CE-ADC	TIMER RELAY, 24VDC, DPDT, ADJUSTABLE
20	1	FUJI 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	FUJI 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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ENCORUS GROUP
encorus.com

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°3'57.14"W
MANY FARMS, ARIZONA, 86538

REVISIONS:

REV	DESCRIPTION	DATE	DFTR	CHKR
0	100% SUBMISSION	2020-10-06	SBV	GMC

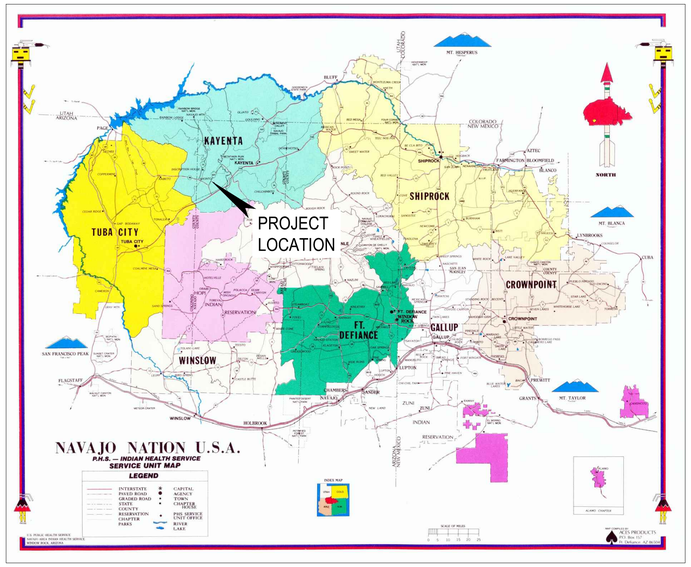
PROJECT NUMBER:	20244
ENGINEER:	GMC
DRAWING SCALE:	NTS
DRAWING SIZE:	ANSI D

DRAWING TITLE:
MANY FARMS SITE PUMP PANEL 480V FABRICATION DIAGRAM

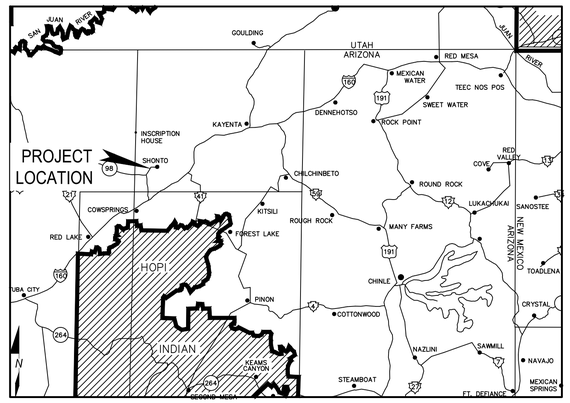
DRAWING NUMBER:
EI704

REFURBISHMENT & UPGRADE OF EXISTING LIFT STATION

SHONTO CHAPTER, NAVAJO COUNTY, ARIZONA
OCTOBER 2020



SITE LOCATION MAP
(NOT TO SCALE)



VICINITY MAP
(NOT TO SCALE)

100% PLANS
ISSUED FOR CONSTRUCTION
BY:LASPAAS DATE:Oct 12, 2020 4:44pm

REFURBISHMENT & UPGRADE OF LIFT STATION - SHONTO 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
G-06	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-602	ELECTRICAL ONE-LINE DIAGRAM
EI-702	ELECTRICAL INSTRUMENTATION PANEL

PREPARED FOR:

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

PREPARED BY:

iiná bá, Inc.
www.iinaba.com
1812 Schofield Lane Farmington, NM 87401
P.O. BOX 2606 Farmington, NM 87499

KITCHELL

eec

ENCORUS GROUP

Registered Professional Engineer (Civil)
CERTIFICATE NO.
50207
ROBERT J RUNGE II
Date Signed
ARIZONA U.S.A.
EXPIRES: _____

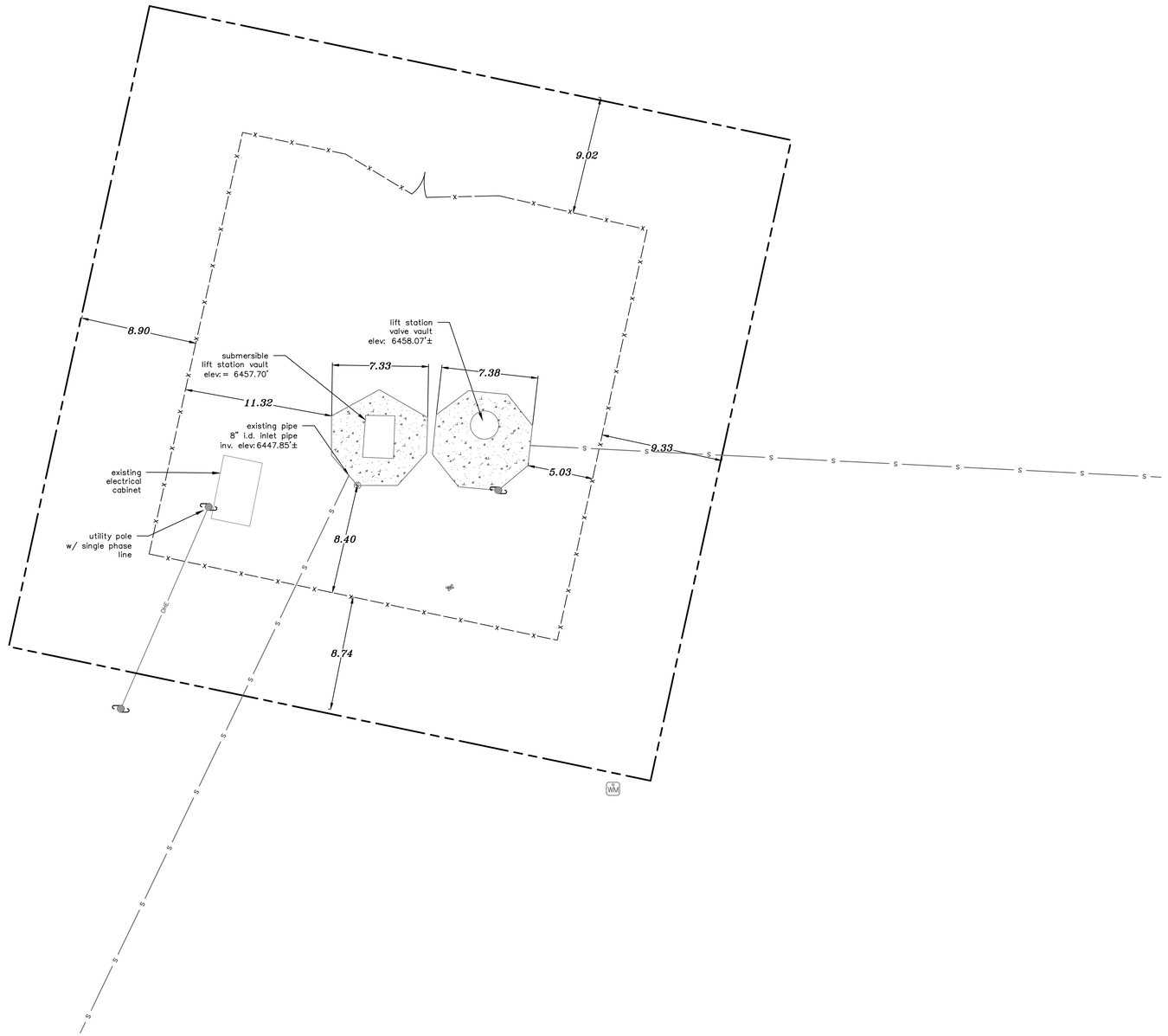
IBI #20-050-02

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.
5. ORIGINAL SHONTO LIFT STATION, PARCEL "F", 50' X 50' AS SHOWN PER PLAN.



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PROJECT:
REFURBISHMENT & UPGRADE OF EXISTING LIFT STATION
36°35'44.73"N, 110°39'43.52"W
SHONTO, ARIZONA 86054

ONLY VALID WITH ORIGINAL STAMP

REVISIONS:

REV	DESCRIPTION	DATE	DFTR	CHKR

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

5 2.5 0 5

DRAWING TITLE:
EXISTING FACILITY PLAN

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ENGINEER:	XXX
DRAWING SIZE:	ANSI D
DRAWING SCALE:	NTS

0 0 0 0

DRAWING TITLE:
EXISTING CONDITIONS SITE LAYOUT

DRAWING NUMBER:
G-02

BILL OF MATERIALS

DWG	ITEM NUMBER	QUANTITY	PART NUMBER	MANUFACTURER	DESCRIPTION
M-02	18	1	30005-0008-DI	JWC	MUFFIN MONSTER
M-02	19	1	PC 2200	JWC	CONTROLLER ASSEMBLY, NOT SHOWN
M-02	20	1	-(INCLUDED)	JWC	CUSTOM FRAME ASSEMBLY NOT SHOWN
M-02	21	1	-(INCLUDED)	JWC	CUSTOM GUIDE RAIL ASSEMBLY, NOT SHOWN
M-02	22	1	-(INCLUDED)	JWC	CUSTOM LIFTING BAIL ASSEMBLY
M-02		3	-(INCLUDED)	JWC	O&M MANUALS (HARD COPY)
M-02	23	1	32537R	JWC	FRAME WALL MOUNT
M-02	24	1	32523	JWC	GUIDE PLATE
M-02	25	8	30249	JWC	HHCS 3/8-16 X ¾ SST
M-02	26	8	30140	JWC	LOCK WASHERS SPLIT 3/8 SST
S-01	27	1	D3A24E	HALLIDAY PRODUCTS	PORTABLE HOIST – 1,500 LB LIMIT; SST
S-01	28	1	SERIES D3S	HALLIDAY PRODUCTS	HOIST SOCKET; LINED
S-01	29	1	8'-0" DIAMETER AND DESIGNED FOR H20 D-LOAD WITH OPENING FOR HATCH	HALLIDAY PRODUCTS	PRECAST LID
S-01	30	1	S1R3654	HALLIDAY PRODUCTS	ACCESS HATCH AND SAFTETY GRATE
S-01	31	1	NEOPRENE SEALANT FOR PRECAST LID SEAT ON BARREL OF EXISTING WELL	HALLIDAY PRODUCTS	WATER SEAL FOR SEATING CONNECTION

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SHONTO, ARIZONA 86054

Registered Professional Engineer (Civil)
35254
ROBERT L. OWENS
Date Signed 10/06/20
ARIZONA, U.S.A.
Expires 09/30/2021

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5 2.5 0 5

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BILL OF MATERIALS

DRAWING NUMBER:

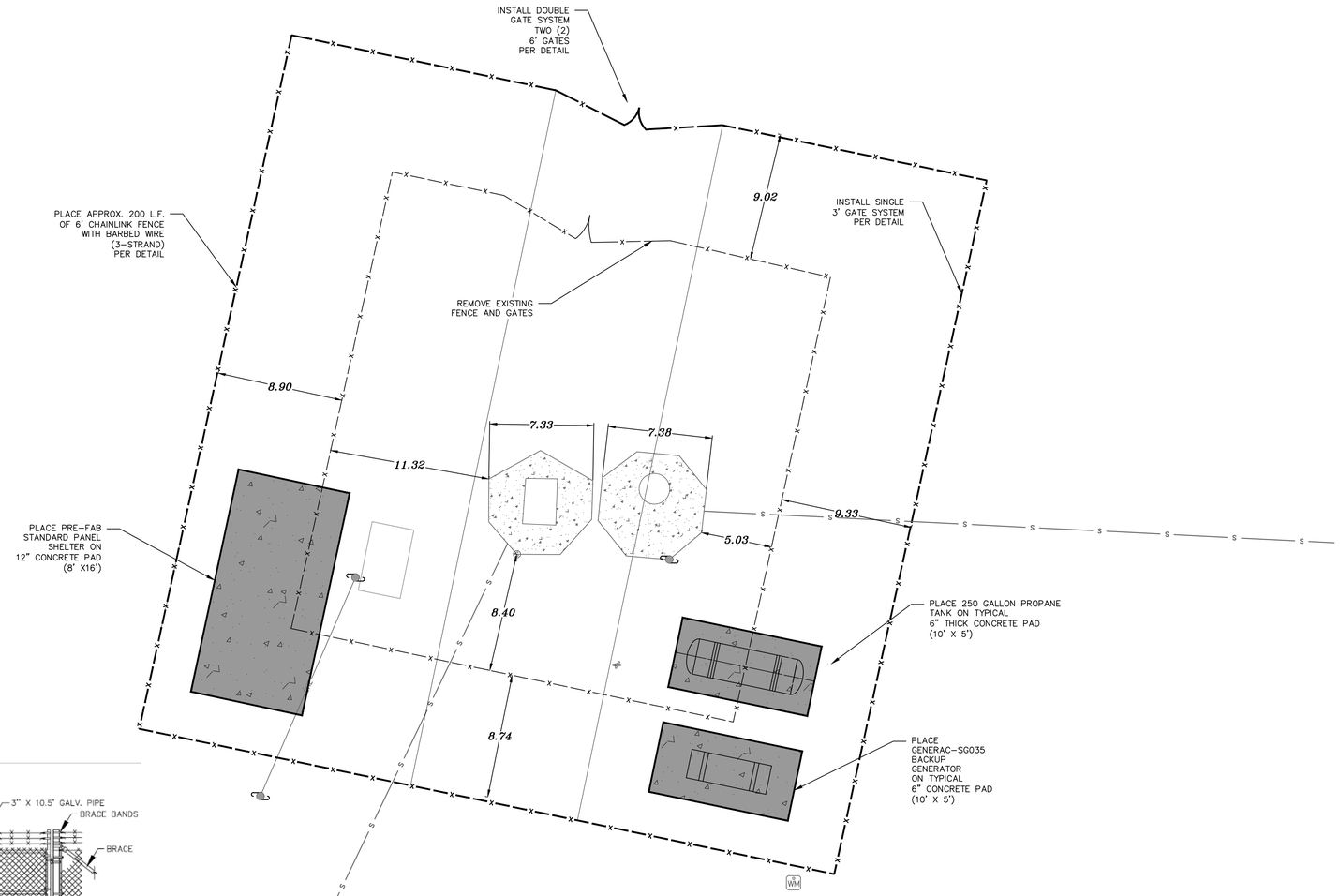
G-03

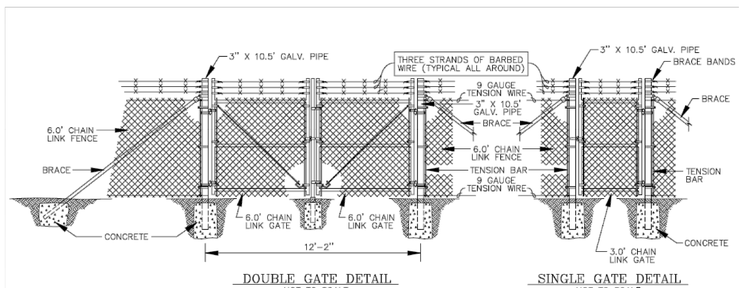
LEGEND

- TRACT LIMITS (SEE NOTE 4)
- EXISTING GRADE CONTOUR
- EDGE OF GRAVEL
- W — DOMESTIC WATER
- UE — UNDERGROUND ELECTRIC
- OHE — OVERHEAD ELECTRIC
- GAS — 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
- PROPOSED CONCRETE SURFACE

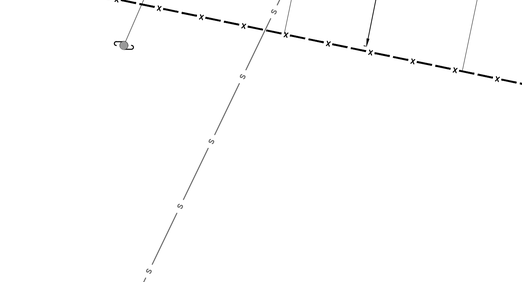
NOTES:

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.
5. ORIGINAL SHONTO LIFT STATION, PARCEL "F", 50' X 50' AS SHOWN PER PLAN.

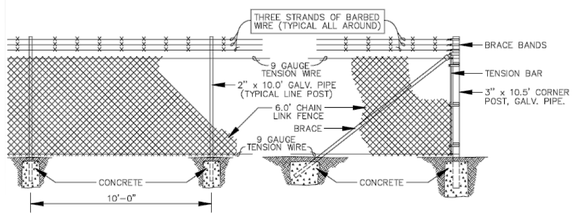




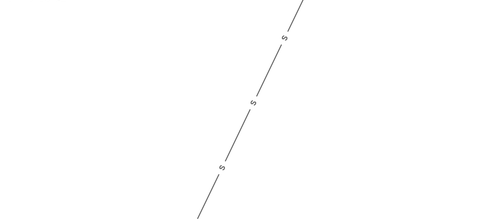
DOUBLE GATE DETAIL
NOT TO SCALE



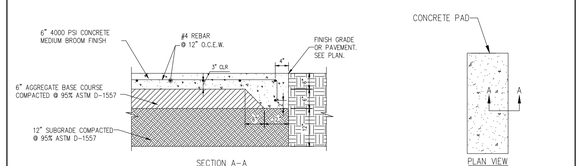
SINGLE GATE DETAIL
NOT TO SCALE



LINE POST DETAIL
NOT TO SCALE



CORNER POST DETAIL
NOT TO SCALE



CONCRETE PAD
NTS

iiná bá, Inc.
www.iinaba.com

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°35'44.73"N, 110°39'43.52"W
SHONTO, ARIZONA 86054

Registered Professional Engineer (Civil)
CERTIFICATE NO.
50207
ROBERT J RUNGE II
Date Signed
ARIZONA U.S.A.

EXPIRES: _____

ONLY VALID WITH ORIGINAL STAMP

REVISIONS:

REV	DESCRIPTION	DATE	DFTR	CHKR

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

5 2.5 0 5

DRAWING TITLE:
SITE PLAN

DRAWING NUMBER:
G-04

SHONTO 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 dialectric 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

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.
   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.

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.

HP	900 RPM	1,200 RPM	1,800 RPM	3,600 RPM
250	95.0	95.4	95.8	95.8
300-500	95.0	95.8	95.8	95.8

B. Probable motor horsepower ratings have been specified or shown on the Drawings. Changes from the specified horsepower may be accepted, if necessary to assure that motors do not exceed their maximum permissible loading, as defined above, under normal operation. Motor horsepowers 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

   b. Service factor of 1.15 or better.
   c. Class F insulation, Class B temperature rise.
   d. Rated for 6 starts per hour.

   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
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

C. Motors used with adjustable frequency drives shall have inverter duty complying with NEMA MG-1, Section IV, Part 31.

NAMEPLATE

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. Regreasable 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.

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

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.

COMMINUTOR/MACERATOR

iiná bá, Inc.
www.iinaba.com
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°35'44.73"N, 110°39'43.52"W
SHONTO, ARIZONA 86054



ONLY VALID WITH ORIGINAL STAMP

REVISIONS:

REV	DESCRIPTION	DATE	DFTR	CHKR

PROJECT NUMBER: 20-050-02
ENGINEER: XXX
DRAWING SIZE: ANSI D
DRAWING SCALE: NTS
5 2.5 0 5

DRAWING TITLE:
MECHANICAL SPECIFICATIONS

DRAWING NUMBER:
G-05

SECTION 11330
MUFFIN MONSTER®
IN-CHANNEL GRINDER – SERIES 30005
2" hex/Wipes Ready/XPNV Immersible Electric Motor/PC2200 Controller

PART 1 - GENERAL

1.1 SCOPE OF WORK

A. The Contractor shall furnish, install, place into satisfactory operation, and warrant the Wipes Ready 30005 for shredding municipal wastewater solids, as shown on the Plans and described by the Specifications.

B. All items detailed in this section shall be provided by the same manufacturer.

1.2 REFERENCE STANDARDS

A. Equipment shall, as applicable, meet the requirements of the following industry standards:

1. American Society for Testing and Materials (ASTM) A36 Carbon Steel Plate
2. American Society for Testing and Materials (ASTM) A536-84 Ductile Iron Castings
3. American Iron and Steel Institute (AISI) 4130 Heat Treated Alloy Steel
4. American Iron and Steel Institute (AISI) 4140 Heat Treated Alloy Steel
5. American Iron and Steel Institute (AISI) 8620 Heat Treated Alloy Steel
6. American Iron and Steel Institute (AISI) 303 Stainless Steel
7. American Iron and Steel Institute (AISI) 304 Stainless Steel
8. American Iron and Steel Institute (AISI) 316 Stainless Steel
9. American Iron and Steel Institute (AISI) 17-4 PH Stainless Steel
10. Society of Automotive Engineers (SAE) 660 Bearing Bronze

B. Controllers shall, as applicable, meet the requirements of the following Regulatory Agencies:

1. National Electrical Manufacturer's Association (NEMA) Standards
2. National Electrical Code (NEC)
3. Underwriters Laboratory (UL and cUL)
4. International Electrotechnical Commission (IEC)

1.3 QUALITY ASSURANCE

A. Identification

1. Equipment shall be identified with a corrosion-resistant nameplate affixed in a conspicuous location.

2. Nameplate information shall include manufacturer's name and address, equipment model number, and serial number.

a. Intermediate shaft yokes shall be factory lubricated with high temperature marine grade grease.

b. Grease fittings shall be provided on intermediate shaft yokes for periodic maintenance.

c. Intermediate shaft yokes shall only be supplied on cutter stacks of 32-inches (813mm) and taller.

4. Side Rails

a. Side rails shall be constructed of ASTM A536 ductile iron.

b. Cutter side rail shall have evenly-spaced horizontal fingers. Fingers shall be designed to create a pressure differential towards the center of the grinder, directing solids into the cutter stack, while at the same time minimizing overall pressure drop through the grinder.

c. Clearance between cutter side rail and adjacent cutters shall not exceed 0.100" (2.54 mm).

5. Shaft Bearings and Seals

a. Radial and axial loads shall be borne by sealed, oversized, deep-groove ball bearings.

b. Shaft seal type shall be mechanical.

c. Each bearing and seal arrangement shall be incorporated into a cartridge-style housing.

d. Cutter shafts shall be supported on both ends. Cantilever-style arrangements shall not be permitted.

e. Dynamic and rotating seal faces shall be Tungsten Carbide with 6% Nickel binder.

f. Seal cartridges shall be rated to a maximum pressure of 90 psi (620 kPa).

g. O-rings shall be of BUNA-N.

h. Seal cartridges shall not require flushing.

i. Seals shall be rated to operate wet or dry.

6. Housings and Covers

d. Housings and top cover shall be of ASTM A536 ductile iron. Bottom cover shall be of A36 carbon steel.

e. End housings shall have integral bushing deflectors to guide solids away from seal cartridges.

A. Manufacturer

1. Supplier shall be ISO9001 certified and have a minimum 40 years experience as a manufacturer of municipal waste water equipment and a minimum 10000 prior installations of similar equipment.

2. Supplier shall, at request, provide a list of reference sites of similar equipment for verification by the Engineer or Owner's representative.

3. Supplier shall conduct factory testing and verification of equipment prior to shipment.

4. Supplier shall have factory-owned bi-coastal service centers in USA.

5. Supplier shall have an exchange/repair service program.

1.4 SUBMITTALS

A. Approval Documents

Supplier shall submit approval documents in .pdf format. Submittals shall include equipment descriptions, functional descriptions, dimensional and assembly drawings, catalog data, job specific drawings, manufacturer's instructions, and recommended spares.

B. Operation and Maintenance Manuals

The supplier shall submit one (1) copy of a suitable operation & maintenance manual. An electronic version shall be supplied to create additional copies. The manuals shall include equipment descriptions, operating instructions, drawings, troubleshooting techniques, a recommended maintenance schedule, recommended lubricants, and recommended spares.

C. Warranty Documentation

The supplier shall submit a warranty statement clearly identifying the scope and term of the warranty.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Packaging and Shipment

1. Equipment shall be packaged in containers or on skids suitable for normal shipping, handling, and storage.

2. Equipment shall be protected from rain, snow, impact and abrasion while in the possession of the carrier.

B. Delivery and Acceptance Requirements

Contractor shall review the contents of the shipment at time of delivery and promptly notify the carrier and supplier of any discrepancies.

8. Transfer Gears

a. Transfer gears shall be of involute profile and fabricated from heat treated alloy steel.

b. Transfer gear tooth design, thickness and hardness shall be suitable to transfer torque between shafts up to the rated breakdown torque of the motor.

c. The interface between transfer gears shall be factory lubricated with grease to minimize wear.

d. The transfer gear ratio shall be such that the ratio of cutter tip speed of the low speed shaft to cutter tip speed of the high speed shaft shall be greater than 0.90 and less than 1.00 to promote tearing of material as it passes through the cutter stack and at the same time facilitate cleanout of material from between the cutters.

9. Low Speed Coupling

a. Low speed coupling shall be a 3-jaw type.

b. The 3-jaw halves shall be of hardened 4140 alloy steel.

c. Each low speed coupling half shall be encapsulated on its mating shaft to facilitate proper engagement of coupling lobes (1/16" – 1/8").

d. The interface between low speed coupling halves shall be factory lubricated with grease to minimize wear.

7. Speed Reducer

a. Speed reducer shall be manufactured by Sumitomo Machinery Corporation of America.

b. Speed reducer shall be a cycloidal type.

c. Speed reduction ratio shall be 29:1.

d. Speed reducer shall be grease lubricated.

8. High Speed Coupling

a. High speed coupling shall be a 3-jaw type with elastomer spider.

b. The 3-jaw halves shall be of sintered iron.

c. The spider shall be of BUNA-N.

9. Motor

a. Motor shall be manufactured by Baldor Electric Company.

b. Motor shall have characteristics as listed in Performance Requirements.

12. Lifting Brackets

C. Storage and Handling Requirements

1. Equipment shall remain in the packaging provided by the supplier until it is installed.

2. Equipment shall be stored in a dry environment between 40° F (4.5° C) and 100° F (37.8° C).

D. Packaging Waste Management

Contractor shall be responsible for discarding all packaging materials in an environmentally-friendly manner and in accordance with local regulations.

1.6 WARRANTY

Manufacturer's standard 12-month limited warranty shall be provided with the equipment.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Equipment shall be in accordance with these plans and specifications and shall be supplied by one of the following manufacturers:

1. JWC Environmental, LLC, 290 Paularino Ave., Costa Mesa, CA 92626; Tel: 800-331-2277

Muffin Monster Grinder Model 30005, Wipes Ready
Motor Controller Model PC2200

2. Approved equal.

B. Manufacturers requesting to be selected as an approved equal shall satisfy the requirements of the following section "Pre-Approval of Alternate Equipment."

2.2 PRE-APPROVAL OF ALTERNATE EQUIPMENT

A. Manufacturers requesting to be selected as an approved equal shall either: (i) perform a pilot test at the facility, or; (ii) coordinate a site visit to allow the Engineer and owner the opportunity to witness the performance of the proposed equipment. This task shall be completed a minimum of 10 days prior to the bid. All expenses associated with (i) or (ii) above shall be paid for by the submitting manufacturer.

B. Manufacturers requesting to be selected as an approved equal shall also submit certified documentation showing compliance with these specifications a minimum of ten (10) days prior to bid opening. Selected equipment manufacturers shall be added to the list of approved manufacturers at engineer's discretion.

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2.3 PERFORMANCE REQUIREMENTS

A. General

Grinder shall reduce or shred influent solids for protection of downstream equipment.

a. Grinder shall be fitted with two (2) lifting rings.

2.6 MOTOR CONTROLLER

A. Description

Controller shall provide programmable operation of the grinder system. Controller shall have switches, indicator lights, and other control devices.

Controller shall be designed to suit the supply power and motor characteristics listed in Performance Requirements.

B. Components

1. Enclosure

a. Enclosure shall be fiberglass reinforced plastic, NEMA 4X.

b. Enclosure shall house motor starter, PLC, and control devices.

2. Selector switches

a. Selector switches shall be 22 mm, rated equal to or better than the enclosure.

b. Grinder selector switch shall be three-position and indicate On-Off/Reset-Remote.

3. Pilot Lights

a. Lights shall be 22 mm, LED (pilot lamp), rated equal or better than the enclosure.

b. Lights shall indicate POWER ON, grinder RUN, grinder JAMMED and MOTOR FAULT.

4. Motor Starter

a. Starter shall be IEC, full voltage, reversing.

b. Contactors shall have 120-volt operating coils.

c. Overload relays shall be adjustable and sized to full load amperes (FLA) of the motor.

5. Control Power Transformer

a. Control power transformer shall produce 120-volt AC power from the supply power. Transformer shall be sized and fused in accordance with code to accommodate the control power requirements.

6. Programmable Logic Controller

a. PLC shall be a Panasonic FPX.

7. Current Transducer

B. Design Summary

1.	Number of grinders	1
2.	Number of motor controllers	1
3.	Environment rating for grinders	Hazardous, subject to flooding
4.	Environment rating for motor controllers	Non-hazardous
5.	Supply power characteristics	460 volt / 3 phase / 60 Hertz
6.	Nominal stack height	__" (___ mm)
7.	Minimum liquid handling capacity per grinder	___ GPM (_._ l/s)
8.	Maximum head drop across cutter stack	__" (___ mm) at minimum capacity
9.	Cutter type	Serrated 17-tooth
10.	Spacer type	Knurled
11.	Side rail type	Delta-P high flow, high capture
12.	Shaft seal type	Mechanical, Tungsten Carbide
13.	Seal maximum pressure	90 psi (620 kPa)
14.	Speed reducer type and ratio	Cycloidal, 29:1
15.	Installed horsepower	3 hp (2.2 kW)
16.	Motor type	XPNV, Immersible
17.	Motor service factor	1.15
18.	Minimum motor efficiency (at full load)	88.8%
19.	Minimum motor power factor (at full load)	65.0%
20.	Minimum peak shaft torque	5,185 lb-in/hp (786 Nm/kW)
21.	Minimum peak force at cutter tip	2,202 lb/hp (13,134 N/kW)

2.4 FRAME AND SUPPORTS

A. General

Frame and/or supports shall provide a method for properly securing the grinder in an open channel or wet well. The frame shall allow installation or removal without any disassembly of the frame or grinder.

B. Components

1. Frame shall be fabricated of 304 stainless steel.

2. Frame shall provide proper support and interface to prevent unwanted bypass.

2.5 GRINDER

A. General

Grinder shall be of two-shafted design consisting of individual cutters and spacers driven by hexagonal shafts. The cutters shall actively grab and pull material into the stack for shredding. Grinder shall have upper and lower end housings to retain shaft support bearings and seals. Side rails shall provide structural rigidity while optimizing throughput and capture. Grinder shall have a motor and speed reducer to drive the cutter shafts. The equipment shall operate at low speed with a maximum cutter shaft speed of 60 rpm and shall be specifically-designed for capturing and shredding wipes.

B. Components

1. Cutters and Spacers

a. Cutting stack shall be of nominal height listed in Performance Requirements.

b. Cutting stack shall consist of interleaved cutters and spacers.

c. Cutters and spacers shall be individual disks constructed of heat treated alloy steel.

d. Cutters shall be heat treated to 45-53 HRc.

e. Spacers shall be heat treated to 34-53 HRc

f. Cutters shall have 17 teeth and be 0.438" (11.13 mm) thick.

g. Cutters shall have radial serrations on the leading edges designed to perforate material as it passes between the cutter and adjacent spacer.

h. Cutter tooth height shall be not greater than ½-inch (13 mm) above the root diameter of the cutter.

i. Cutter outside diameter shall not exceed a maximum 4.73" (120.14 mm).

j. Cutter thickness tolerance shall be +.000/-.001" (+.000/-.025 mm). Spacer thickness tolerance shall be +.001/-.000" (+.025/-.000 mm).

k. Spacers shall have a knurled outside diameter designed to aid in tearing of material as it passes through the cutter stack.

l. Spacers shall be 0.446" (11.33 mm) thick.

m. Cutter to cutter clearance shall be a maximum of 0.010" (0.25 mm).

n. Clearance between any cutter tip and adjacent spacer shall be nominal 0.015" (0.38 mm).

2. Shafts

a. Shafts shall be hexagonal, 2" (50.8 mm) across flats.

b. Shafts shall be of heat treated 4140 alloy steel with a minimum tensile strength of 149,000 psi (1,027 kPa).

c. Shaft hardness shall be 38-42 Rockwell C.

3. Intermediate Shaft Yoke (as applicable)

a. Intermediate shaft yokes shall provide radial support to the shafts during severe grinding demands.

b. Intermediate shaft yokes shall be constructed of 304 stainless steel, 660 bronze, and 17-4PH Stainless steel.

a. Current transducer shall be a discrete output type.

b. Current transducer shall have adjustable set point from 1-135A with 200 ms or faster response time.

C. Operation

1. Grinder control shall be in accordance with the setting of the On-Off/Reset-Remote selector switch.

a. In the OFF/RESET position the grinder shall not run. Motor controller faults shall be cleared.

b. In the ON position, the grinder shall run forward.

c. In the REMOTE position, the grinder shall operate as controlled by a remote start/stop dry contact.

2. When an obstruction jams the grinder, the controller shall stop the grinder and reverse the rotation to clear the obstruction. If the obstruction is cleared, the controller shall return the grinder to normal operation. If three (3) reverses occur within a 30 second interval, the controller shall stop the grinder motor and activate the grinder FAIL indicator and relay.

3. When a motor overload or motor over-temperature condition occurs, the motor shall be de-energized, the MOTOR FAULT indicator lamp shall be illuminated and the FAIL contact shall be closed.

4. When a power failure occurs while the system is operating, the system shall return to normal operation when power is restored.

5. When a power failure occurs while the grinder is in a fail condition, the system shall return to a fail state when power is restored. The fail state shall not be cleared until reset.

6. Reset of the grinder shall be accomplished from the controller only.

2.7 FINISHES

A. Paint Coatings (Ferrous Materials)

Ferrous metal surfaces shall be prepared to SSPC-SP6 (Commercial Blast Cleaning) and coated with minimum 6-8 mils TDFT (total dry film thickness) paint of type and color listed in Performance Requirements.

B. Paint Coatings (Previously-Coated Components)

Previously-coated components (motors, speed reducers, etc.) shall be prepared to SSPC-SP1 (Solvent Cleaning) and SSPC-SP2 (Hand Tool Cleaning) and coated with minimum 6-8 mils TDFT (total dry film thickness) paint of type and color listed in Performance Requirements.

PART 3 - EXECUTION

3.1 INSTALLATION

The Contractor shall coordinate installation of the equipment in accordance with the manufacturer's installation instructions, drawings and related specification sections, and in accordance with all OSHA, local, state, and federal codes and regulations.

3.2 SYSTEM START-UP

The equipment supplier shall provide the services of a factory or manufacturer's representative for a minimum of one (1) day to inspect the equipment for proper installation, apply power for the first time and check for proper motor rotation, oversee the initial introduction of material into the system and confirm the equipment operates as intended. Representative shall also provide services as detailed in Training below.

3.3 TRAINING

Field training shall be provided for operations, maintenance and supervisory staff members. Field instruction shall cover key components of the equipment, operating and maintenance requirements and troubleshooting techniques.

END OF SECTION

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

PROJECT:
REFURBISHMENT & UPGRADE OF EXISTING LIFT STATION
36°35'44.73"N, 110°39'43.52"W
SHONTO, ARIZONA 86054

Certified Professional Engineer NCEES
35254
ROBERT L. OWENS
Date Signed 10/10/20
ARIZONA, U.S.A.
Expires 09/30/2021

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REVISIONS:

REV	DESCRIPTION	DATE	DFTR	CHKR

PROJECT NUMBER:	20-050-02
ENGINEER:	XXX
DRAWING SIZE:	ANSI D
DRAWING SCALE:	NTS

DRAWING TITLE:
MECHANICAL SPECIFICATIONS

DRAWING NUMBER:
G-06

INSTRUMENT SYMBOL IDENTIFIERS

J-3 J-4, J-5
J-1 / J-2
J-6

J-1: IDENTIFICATION LETTERS (SEE TABLE BELOW)
J-2: LOOP NUMBER
J-3: VENDOR DESIGNATOR (NOTE 3)
J-4: FUNCTION BLOCK (SEE TABLE BELOW)
J-5: PANEL NUMBER
J-6: HANDSWITCH DESIGNATOR (SEE BELOW)

	FIRST LETTER		SUCCEEDING LETTERS		
	MEASURED OR INITIATING VARIABLE	MODIFIER	READOUT OR PASSIVE FUNCTION	OUTPUT FUNCTION	MODIFIER
A	ANALYSIS		ALARM		
B	BURNER, COMBUSTION		USER'S CHOICE	USER'S CHOICE	USER'S CHOICE
C	USER'S CHOICE			CONTROL	CLOSED
D	DENSITY	DIFFERENTIAL	DAMPER		
E	VOLTAGE		SENSOR (PRIMARY ELEMENT)		
F	FLOW RATE	RATIO (FRACTION)			
G	USER'S CHOICE		GLASS, VIEWING DEVICE		
H	HAND				HIGH
I	CURRENT (ELECTRICAL)		INDICATE		
J	POWER	SCAN			
K	TIME, TIME SCHEDULE	TIME RATE OF CHANGE		CONTROL STATION	
L	LEVEL		LIGHT		LOW
M	MOISTURE	MOMENTARY			MIDDLE, INTERMEDIATE
N	USER'S CHOICE		USER'S CHOICE	USER'S CHOICE	USER'S CHOICE
O	USER'S CHOICE		ORIFICE, RESTRICTION		OPEN
P	PRESSURE, VACUUM		POINT (TEST) CONNECTION		
Q	QUANTITY	INTEGRATE, TOTALIZE			
R	RADIATION		RECORD		
S	SPEED, FREQUENCY	SAFETY	SWITCH		
T	TEMPERATURE			TRANSMIT	
U	MULTI VARIABLE		MULTIFUNCTION	MULTIFUNCTION	MULTIFUNCTION
V	VIBRATION, MECHANICAL ANALYSIS			VALVE, DAMPER, OR LOUVER	
W	WEIGHT, FORCE		WELL		
X	UNCLASSIFIED	X AXIS	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED
Y	EVENT, STATE, PRESENCE	Y AXIS		RELAY, COMPUTE, CONVERT	
Z	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

- Σ SUMMING
- △ DIFFERENCE
- ∫ INTEGRAL
- d/dt DERIVATIVE
- × MULTIPLYING
- ÷ DIVIDING
- */ CONVERT:
- √ ROOT EXTRACTION
- √ SQUARE ROOT
- x^n EXPONENTIAL
- > HIGH SELECTING
- < LOW SELECTING
- ± BIAS
- F(X) NONLINEAR OR UNSPECIFIED FUNCTION

* E – VOLTAGE, I – CURRENT, P – PNEUMATIC, A – ANALOG, B – BINARY, H – HYDRAULIC, O – ELECTROMAGNETIC, SONIC, R – RESISTANCE (ELECT), D – DIGITAL

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
1-0	ON-OFF		

INSTRUMENT SERVICES

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

PLC INPUT/OUTPUT

- DISCRETE INPUT
- DISCRETE OUTPUT
- ANALOG INPUT
- 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 (M)
- SONIC FLOWMETER

LINES

- MAIN PROCESS
- SECONDARY PROCESS
- DOUBLE CONTAINED PIPE
- I2/B — REFERENCES TO OTHER SHEET
- LINE CONTINUATION
- DRAWING REFERENCE
- 24" BW — 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 — OR — ELECTRICAL

- CONNECTED
- NOT CONNECTED
- 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
- M — MOTOR
- CYLINDER OPERATOR
- S — SOLENOID
- SV — 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
- PERISTALTIC PUMP
- M — MIXER
- TURBINE 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
- P — PURGE
- DRAIN
- THERMOMETER WELL
- TORQUE SWITCH
- –
- I / 3 — 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
- * AV – AIR VALVE, F – FILTER, T – TRAP, FH – FIRE HYDRANT
- WATER

NOTES

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

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

PROJECT:
REFURBISHMENT & UPGRADE OF EXISTING LIFT STATION
36°35'44.73"N, 110°39'43.52"W
SHONTO, ARIZONA 86054

ROBERT L. OWENS 35254 — Registered Professional Engineer (Civil) — Date Signed 10/6/20 — ARIZONA, U.S.A. — Expires 09/30/2021

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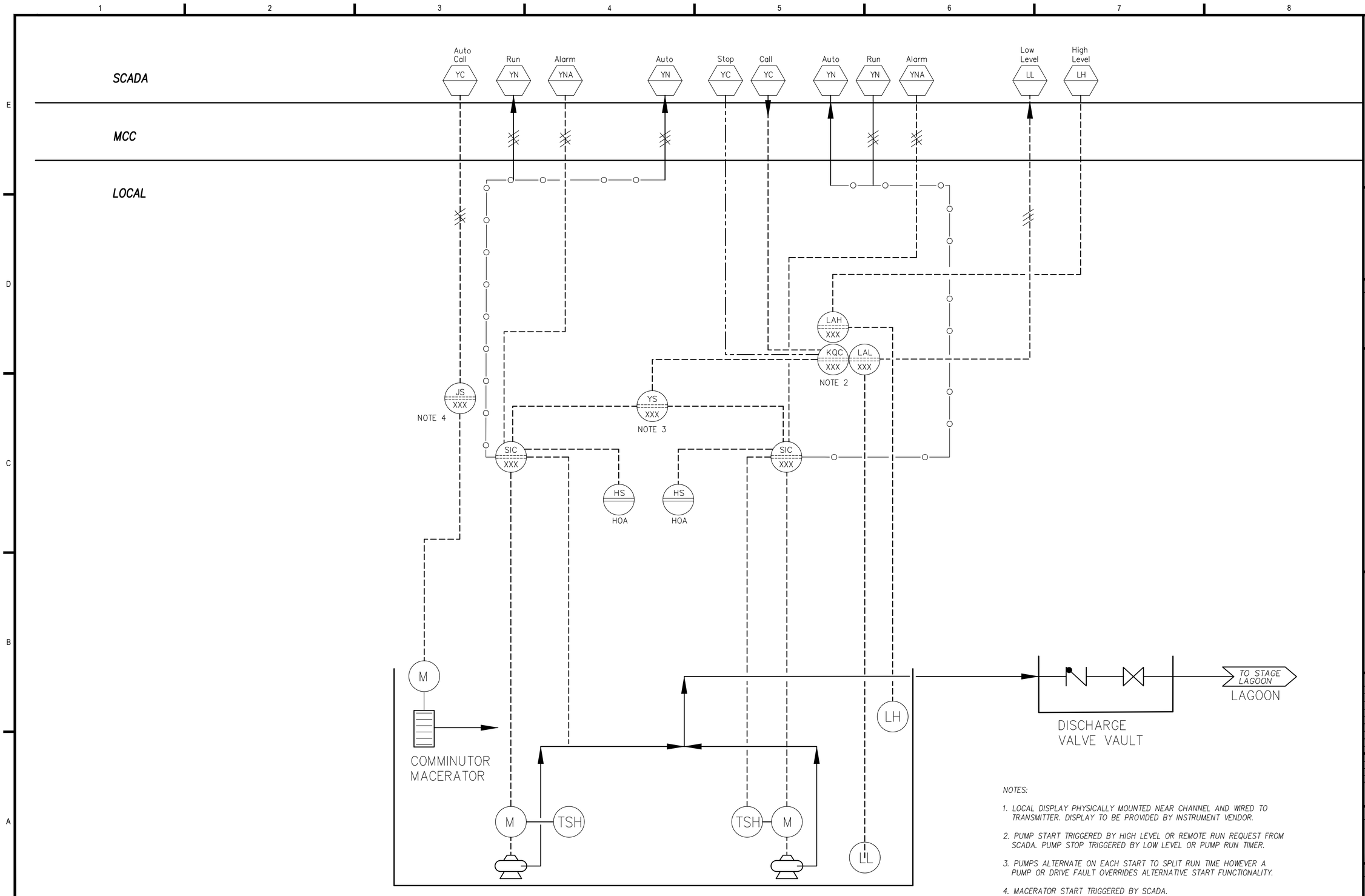
REVISIONS:

REV	DESCRIPTION	DATE	DFTR	CHKR

PROJECT NUMBER:	20-050-02
ENGINEER:	XXX
DRAWING SIZE:	ANSI D
DRAWING SCALE:	NTS

DRAWING TITLE:
INSTRUMENTATION AND CONTROL STANDARDS

DRAWING NUMBER:
D-01



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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PROJECT NUMBER:	20-050-02
ENGINEER:	XXX
DRAWING SIZE:	ANSI D
DRAWING SCALE:	NTS

5 2.5 0 5

DRAWING TITLE:
PROCESS AND INSTRUMENTATION DIAGRAM

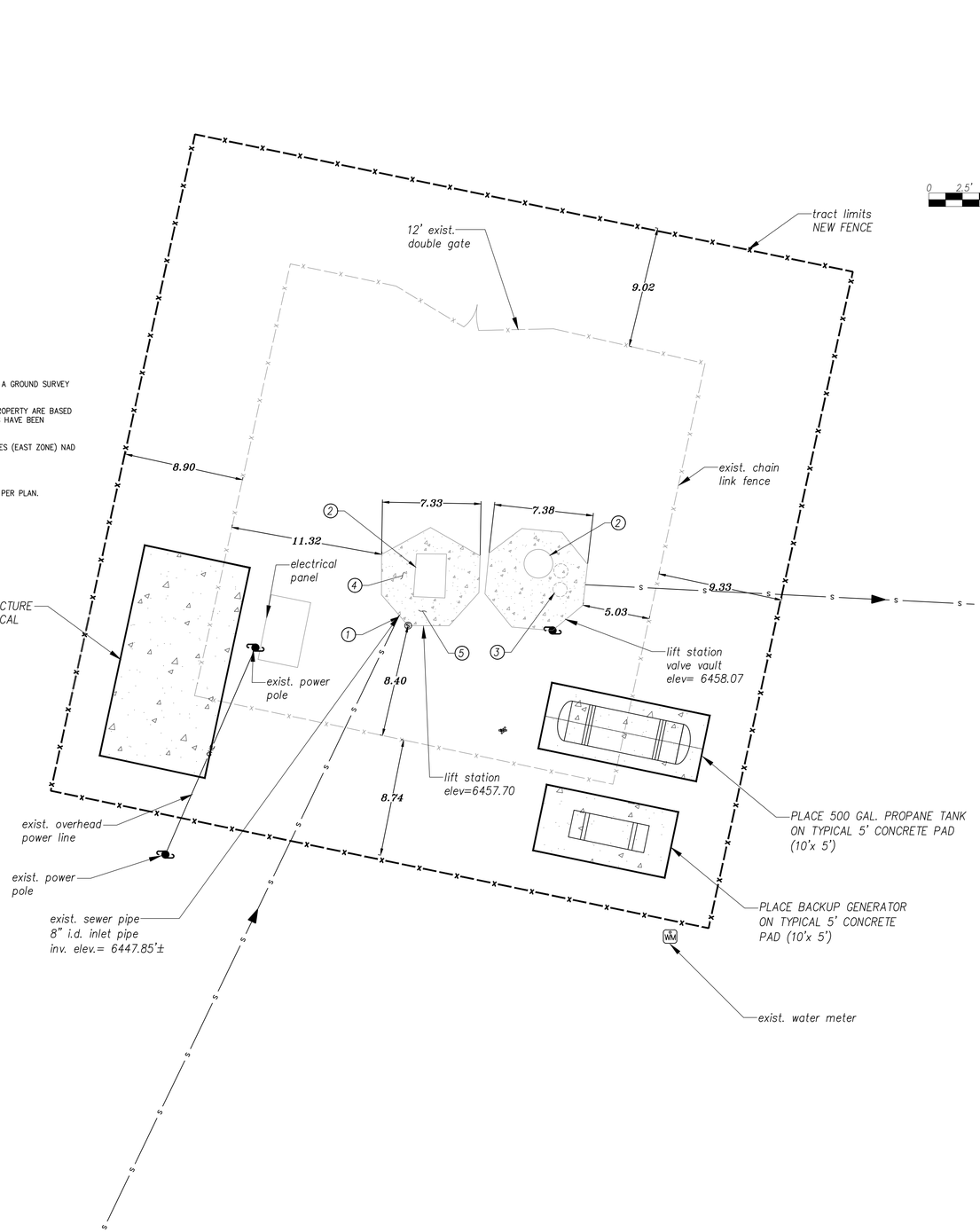
DRAWING NUMBER:
D-02

LEGEND

- TRACT LIMITS (SEE NOTE 4)
- EXISTING GRADE CONTOUR
- EDGE OF GRAVEL
- W — W — DOMESTIC WATER
- UE — UE — UNDERGROUND ELECTRIC
- OHE — OVERHEAD ELECTRIC
- GAS — GAS — PROPANE GAS
- NEW FENCE
- 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.
5. ORIGINAL SHONTO LIFT STATION, PARCEL "F", 50' X 50' AS SHOWN PER PLAN.



0 2.5' 5' 10'

EXIST. COMPONENTS

No.	Description
01	wet well inlet pipe
02	hatch
03	submersible pumps, hidden
04	valves, hidden

NEW COMPONENTS

No.	Description
05	COMMINUTOR/MACERATOR, SEE M-02

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Expires 09/30/2021

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REVISIONS:

REV	DESCRIPTION	DATE	DFTR	CHKR

PROJECT NUMBER:	20-050-02
ENGINEER:	XXX
DRAWING SIZE:	ANSI D
DRAWING SCALE:	NTS

5 2.5 0 5

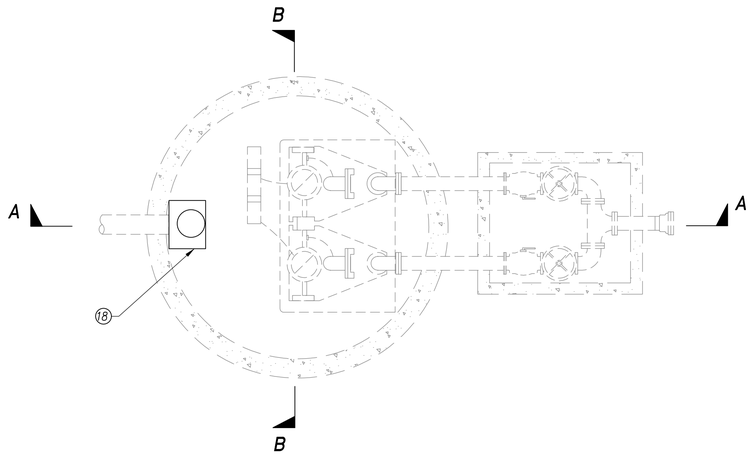
DRAWING TITLE:
MECHANICAL SITE PLAN

DRAWING NUMBER:
M-01

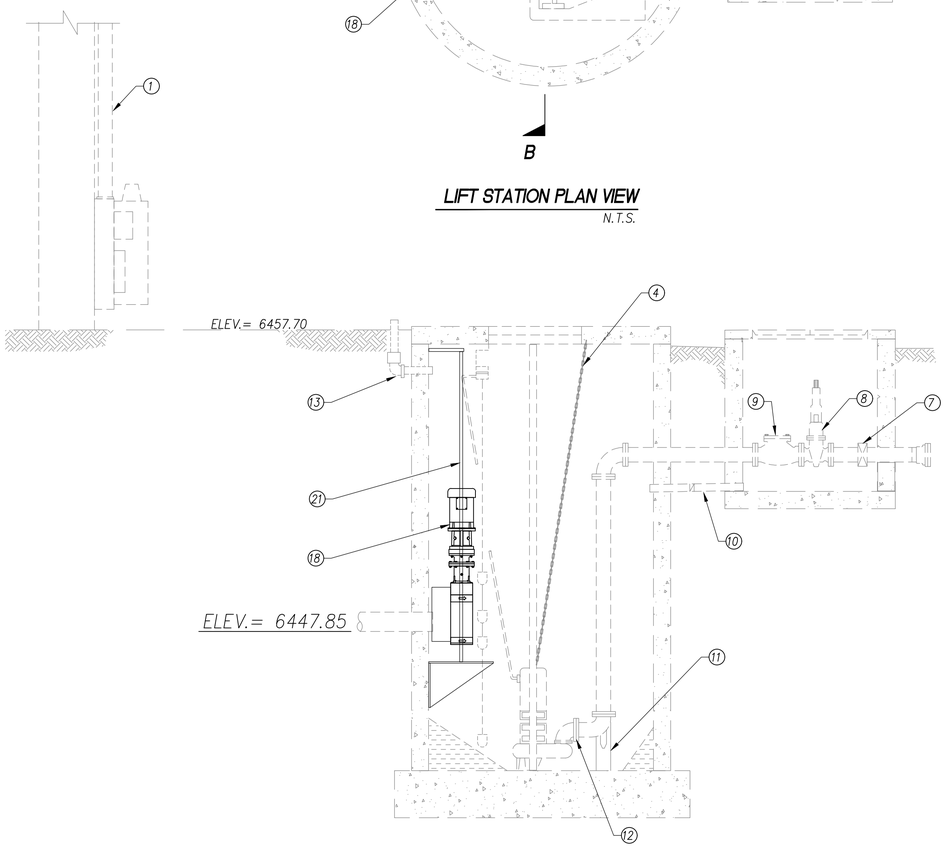
SK2-Shonto

Halliday Products	Dimensions	
Series S1R Access Door w/ safety grate	3654	
Series D Hoist Sockets	D3S Lined	*this is just the socket, does NTUA need a hoist?
Series Portable Hoist	**D3A or D3B?**	*this two Hoist pair with the D3S lined socket.

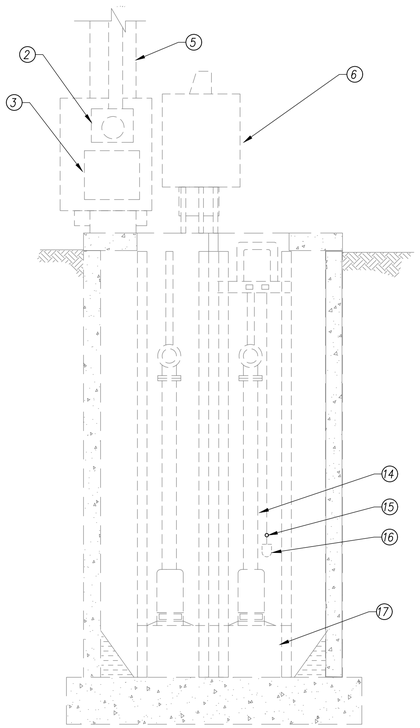
Concrete Lid		
H-20 rated	6ft ID 10" traffic rated lid	*Outside Diameter is 86".
Bottom of Lid	**Flat or grooved?**	



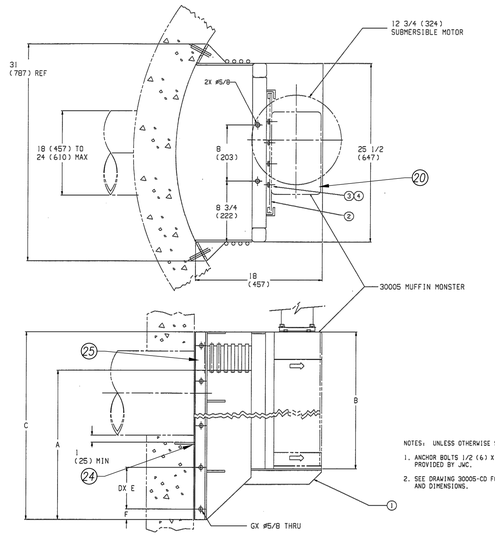
LIFT STATION PLAN VIEW
N.T.S.



SECTION A
N.T.S.



SECTION B
N.T.S.



NOTES: UNLESS OTHERWISE SPECIFIED

1. ANCHOR BOLTS 1/2 (6) X 3 3/4 (95) MIN NOT PROVIDED BY JAC.
2. SEE DRAWING 30005-CD FOR GRINDER DETAILS AND DIMENSIONS.

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REVISIONS			
ZONE	LTR	DESCRIPTION	DATE / APPROVED
	ALL	INITIAL RELEASE	05-31-02 / S-0806-02
	C	2 X COLUMN C WAS 127mm IS 67mm	03-06-04 / S-0744-04

TAB BLOCK							
MODEL NO.	DIMENSIONS & QUANTITIES						
	A	B	C	D	E	F	G
30005-8	20 3/4 (527)	19 1/2 (495)	26 3/4 (679)	8	5 15/16 (151)	1 1/2 (38)	10
30005-12	24 7/8 (632)	23 5/8 (600)	30 7/8 (784)	8	6 13/16 (173)	2 (51)	10
30005-18	30 3/4 (781)	29 1/2 (749)	36 3/4 (933)	8	8 7/16 (214)	1 1/2 (38)	10
30005-24	36 1/2 (927)	35 1/4 (895)	42 1/2 (1080)	8	9 3/4 (248)	1 1/2 (38)	10
30005-32	44 1/4 (1124)	43 (1092)	50 1/4 (1276)	10	9 3/8 (238)	1 1/2 (38)	12
30005-40	52 1/4 (1327)	51 (1295)	58 1/4 (1480)	10	10 7/8 (276)	2 1/2 (64)	12
30005-50	62 1/4 (1581)	61 (1549)	68 1/4 (1734)	12	10 11/16 (271)	2 1/2 (64)	14
30005-60	72 5/8 (1845)	71 3/8 (1813)	78 5/8 (1997)	14	10 11/16 (271)	2 1/2 (64)	16

ITEM	QTY	PART NO.	NOMENCLATURE / DESCRIPTION	SPECIFICATION OR MATERIAL
4	B	30140	LOCKWASHER, SPLIT 3/8	SST
3	B	30249	HHCS 3/8-16 X 3/4	SST
2	1	32523	GUIDE PLATE	
1	1	32537R	FRAME-ROUND WALL MOUNT	

PARTS LIST

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE FRACTIONS ±1/16 ANGLES ± 1/2 (0.5°) .XX ± .03 .XXX ± .010

MATERIAL: A36 STL, 304 SST, 316 SST

FINISH:

CONTRACT NO.:

APPROVALS / DATE
DRAWN: R. ANDERSON 05-31-02
CHECKED: S.ANDERSON 05-06-04

JAC ENVIRONMENTAL
Solid Waste Collection Systems Sales, Rail Maintenance MPMT

FRAME-INSTALLATION
MODEL 30005 WITH GUIDE PLATE
#18"-24# INFLUENT PIPE

SIZE | CODE IDENT NO. | DRAWING NO. | REVISION
D | 53242 | 32537R-CD | A

DO NOT SCALE DRAWING | SCALE 1/4 | SHEET 1 OF 1

COMMINUTOR / MACERATOR
N.T.S.

EXIST. LIFT STATION MATERIALS

1	2" galv. service mast
2	meter enclosure
3	main disconnect
4	pump lifting chain
5	service pole
6	pump controls nema 4
7	4" piping & valve
8	gate valve
9	check valve w/ swing type lever
10	3" drain pipe w/ ck valve
11	pump & support plate w/ discharge elbow
12	hydrologically sealed discharge flange no mechanical contract, self-cleaning
13	vent pipe
14	turn on level (two pump)
15	turn on level (one pump)
16	sealed mercury switch
17	pump support bracket

NEW LIFT STATION MATERIALS

18	COMMINUTOR/MACERATOR
19	CONTROLLER ASSEMBLY, NOT SHOWN
20	CUSTOM FRAME ASSEMBLY
21	CUSTOM GUIDE RAIL ASSEMBLY
22	CUSTOM LIFTING BAIL ASSEMBLY
23	FRAME WALL MOUNT
24	GUIDE PLATE
25	HHCS 3/8"-16 X 3/4 SST
26	LOCK WASHERS SPLIT 3/8 SST
27	PORTABLE HOIST 1,500 LB LIMIT; SST
28	HOIST SOCKET; LINED
29	PRECAST LID
30	ACCESS HATCH AND SAFETY GRATE
31	WATER SEAL FOR SEATING CONNECTION

"ALL STAINLESS STEEL FOR STRUCTURAL ITEMS SHALL BE 316 TYPE"

iiná bá, Inc.
www.iinaba.com
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°35'44.73"N, 110°39'43.52"W
SHONTO, ARIZONA 86054

Registered Professional Engineer, Civil
35254
ROBERT L. OWENS
Date Signed 10/19/20
ARIZONA, U.S.A.
Expires 09/30/2020

ONLY VALID WITH ORIGINAL STAMP

REVISIONS:

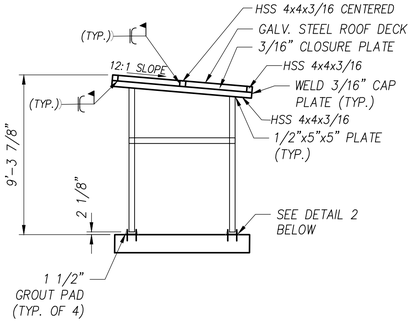
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ENGINEER:	XXX
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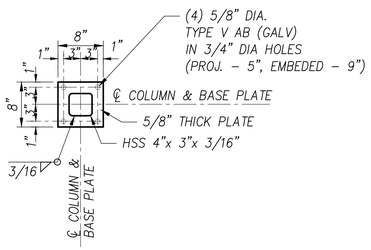
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MECHANICAL SECTIONS

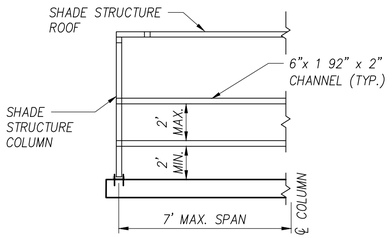
DRAWING NUMBER:
M-02



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



2 POST BASE 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.

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

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

YES
D3A24E (specify 20 ft. cable)

Flat

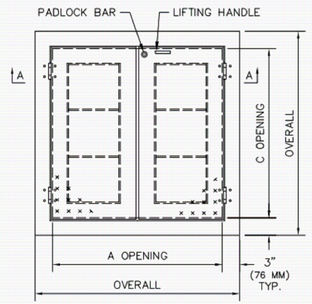
SERIES S2R ACCESS DOOR

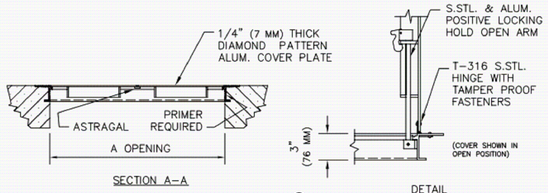
HALLIDAY PRODUCTS
www.HallidayProducts.com
Phone 800-298-1027
Fax 407-298-4534
Sales@HallidayProducts.com

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 (1464 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)	UNIT WT. LBS. (KG.)
	S2R4242	42 (1067)	42 (1067)	93 (42)
	S2R4842	48 (1219)	42 (1067)	99 (45)
	S2R4848	48 (1219)	48 (1219)	110 (50)
	S2R5442	54 (1372)	42 (1067)	108 (49)
	S2R5448	54 (1372)	48 (1219)	119 (54)
	S2R5454	54 (1372)	54 (1372)	127 (58)
	S2R6030	60 (1524)	30 (762)	87 (39)
	S2R6036	60 (1524)	36 (914)	100 (45)
	S2R6042	60 (1524)	42 (1067)	115 (52)
	S2R6048	60 (1524)	48 (1219)	130 (59)
	S2R6054	60 (1524)	54 (1372)	143 (65)
	S2R6060	60 (1524)	60 (1524)	158 (72)
	S2R6636	66 (1676)	36 (914)	109 (49)
	S2R6648	66 (1676)	48 (1219)	141 (64)
	S2R7236	72 (1829)	36 (914)	116 (53)
	S2R7242	72 (1829)	42 (1067)	135 (61)
	S2R7248	72 (1829)	48 (1219)	151 (68)
	S2R7254	72 (1829)	54 (1372)	168 (76)
	S2R7260	72 (1829)	60 (1524)	178 (81)





30

SERIES DA PORTABLE HOIST

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Phone 800-298-1027
Fax 407-298-4534
Sales@HallidayProducts.com

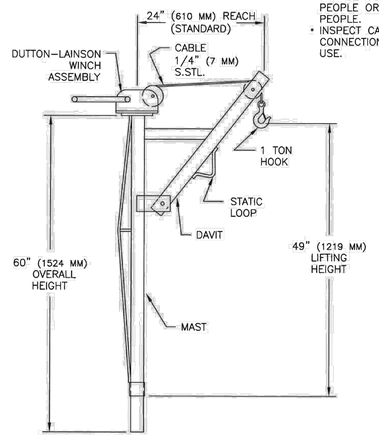
STANDARD FEATURES:
- TYPE-304 STAINLESS STEEL CONSTRUCTION
- 30 FEET (9 METERS) OF 1/4" (7 MM) STAINLESS STEEL CABLE
- GALVANIZED 1 TON HOOK
- DUTTON-LAINSON MARINE GRADE BRAKE WINCH
- 3 YEAR GUARANTEE

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)	65 (30)
	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.



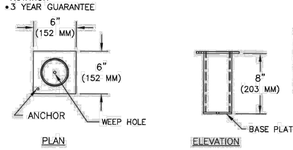
SER-DA-0 6/5/12

28

SERIES D HOIST SOCKETS

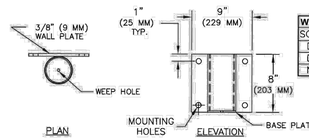
HALLIDAY PRODUCTS
www.HallidayProducts.com
Phone 800-298-1027
Fax 407-298-4534
Sales@HallidayProducts.com

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



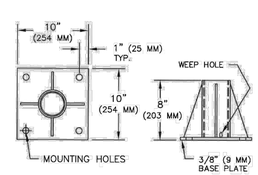
EMBED STYLE HOIST SOCKETS

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



WALL STYLE HOIST SOCKETS

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



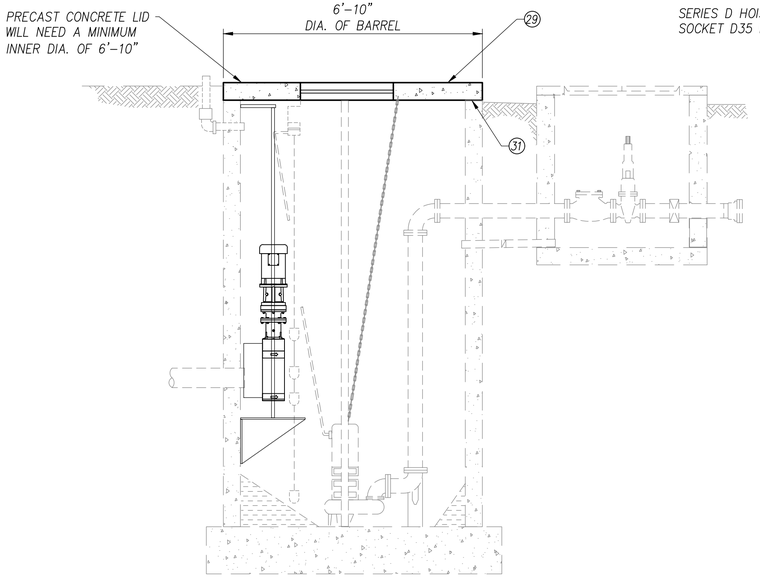
FLOOR STYLE HOIST SOCKETS

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

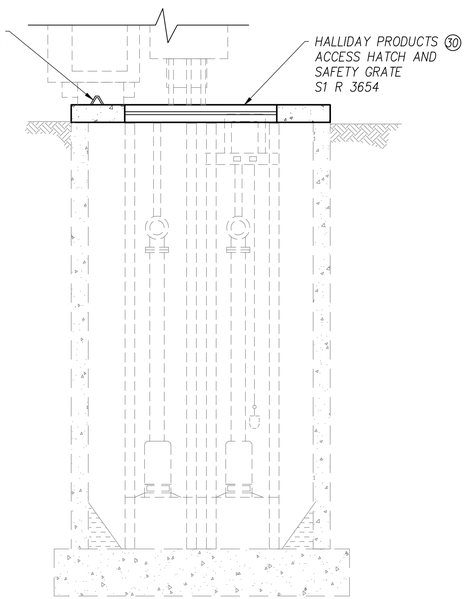
NOTES:
MOUNTING HOLES ARE ø3/4" (ø19 MM)

29

SER-D-0 6/5/12



SECTION A
N.T.S.



SECTION B
N.T.S.

iiná bá, Inc.
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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°35'44.73"N, 110°39'43.52"W
SHONTO, ARIZONA 86054

Registered Professional Engineer
35254
ROBERT L. OWENS
Date signed 6/8/12
ARIZONA, U.S.A.
Expires 09/30/2013
ONLY VALID WITH ORIGINAL STAMP

REVISIONS:

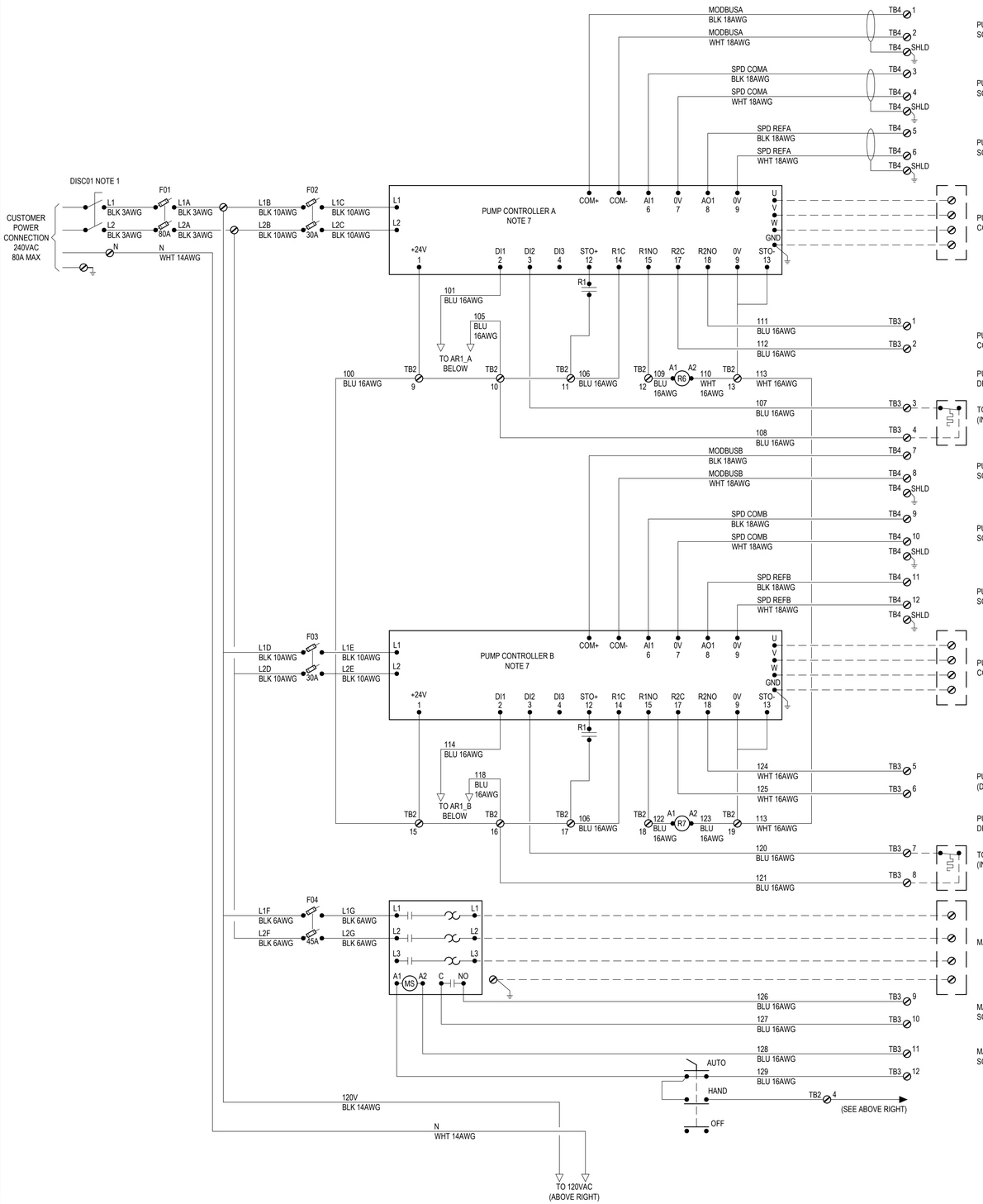
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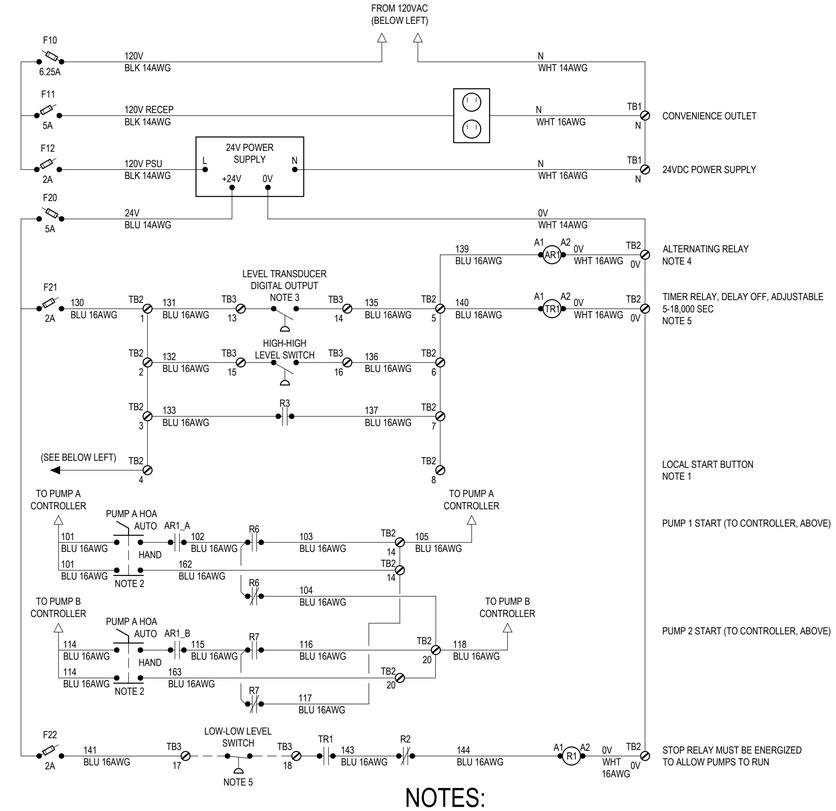
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ENGINEER:	XXX
DRAWING SIZE:	ANSI D
DRAWING SCALE:	NTS

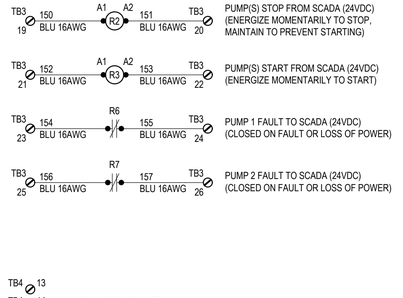
5 2.5 0 5

DRAWING TITLE:
MECHANICAL SECTIONS

DRAWING NUMBER:
S-01







NOTES:

1. PANEL IS DESIGNED TO FUNCTION AUTOMATICALLY IF SCADA CONNECTIVITY IS LOST. SCADA COMMANDS CAN STILL CONTROL FUNCTIONALITY IF REQUIRED.
2. LOCAL SWITCHES ARE INSIDE ENCLOSURE ON SWING OUT PANEL AND CAN ONLY BE ACCESSED FROM INSIDE THE ENCLOSURE.
3. 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.
4. ALTERNATING RELAY SWAPS ACTIVE OUTPUT (A OR B) ON EACH ENERGIZE CYCLE.
5. SYSTEM OPERATION RELIES ON SEVERAL INSTRUMENTS TO PROVIDE REDUNDANT FUNCTIONALITY.
   - 5.1 LEVEL TRANSDUCER PROVIDES "HIGH" LEVEL PUMP START
   - 5.2 LEVEL HIGH-HIGH LEVEL FLOAT SWITCH PROVIDES PUMP START IF THE LEVEL TRANSDUCER FAILS.
   - 5.3 LEVEL TRANSDUCER PROVIDES "LOW" LEVEL PUMP STOP
   - 5.4 LEVEL LOW-LOW LEVEL FLOAT SWITCH PROVIDES PUMP STOP IF THE LEVEL TRANSDUCER FAILS.
   - 5.5 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.
6. 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.
7. PUMP CONTROLLER IS CONFIGURED VIA THE FOLLOWING VALUES:
   - 7.1. RUN AT MAXIMUM SET SPEED UNLESS AN ANALOG INPUT SPEED COMMAND IS RECEIVED FROM SCADA.
     - 7.1.1. MAXIMUM SPEED, MINIMUM START SPEED AND SPEED RAMP VALUES SET IN THE FIELD DURING COMMISSIONING
   - 7.2. DI1 IS CONFIGURED AS A MOMENTARY START SIGNAL TO START PUMP OPERATION.
   - 7.3. DI2 IS PUMP ALARM STATUS, WHICH TRIGGERS A PUMP FAULT AND DISABLES THE SPEED CONTROLLER.
   - 7.4. AI1 IS SPEED COMMAND FROM SCADA
   - 7.5. AO1 IS SPEED REFERENCE TO SCADA
   - 7.6. R1 IS DRIVE/PUMP FAULT
   - 7.7. R2 IS PUMP RUNNING STATUS
8. 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".
9. 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.
   - 9.1 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.
   - 9.2 ALL THREE SWITCHES SHOULD BE LEFT IN "AUTO" AT ALL TIMES WHEN THE PANEL IS UN-SUPERVISED.
   - 9.3 PLACING ANY DEVICE IN "HAND" SHOULD ONLY BE DONE WHILE THE PANEL IS SUPERVISED.
   - 9.4 PLACING A PUMP IN "HAND" STILL MAINTAINS ALL FUNCTIONS THAT AUTOMATICALLY STOP THE PUMP INCLUDING FAULTS.

iiná bá, Inc.
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P.O. BOX 2606
FarminGton, NM 87499

ENCORUS GROUP
encorus.com

CLIENT:
NAVAJO TRIBAL UTILITY AUTHORITY
P.O. BOX 170
FT. DEFIANCE, AZ 86504

PROJECT:
REFURBISHMENT & UPGRADE OF EXISTING LIFT STATION
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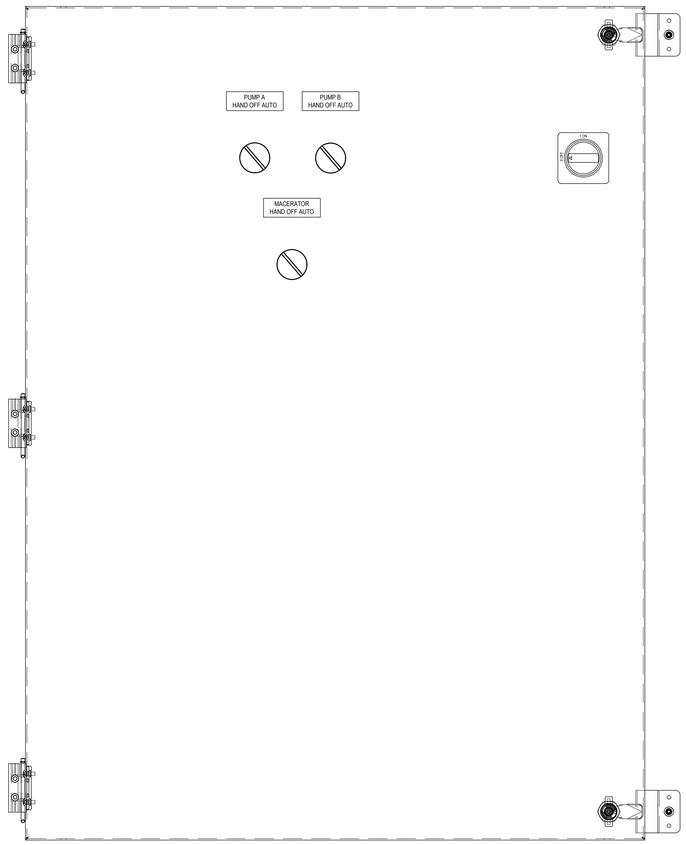
REVISIONS:

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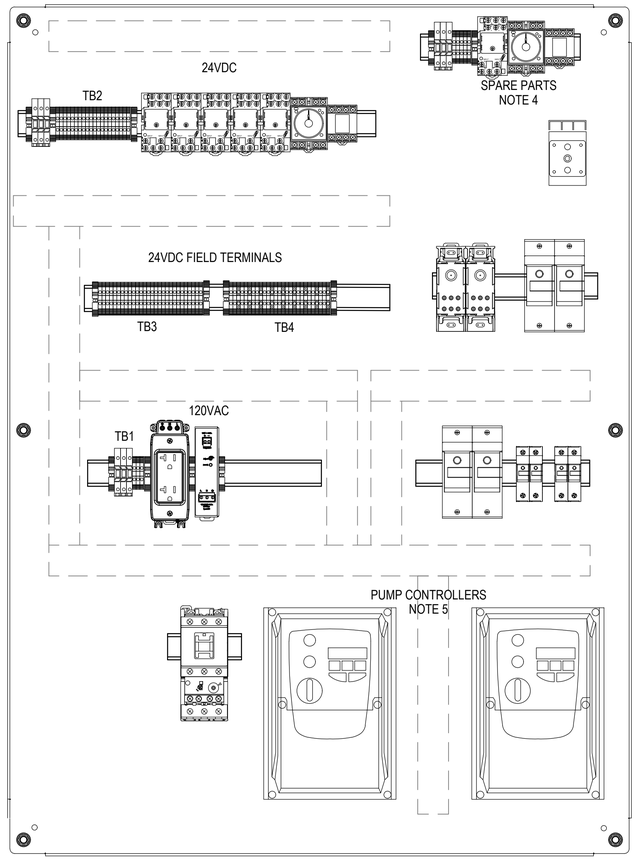
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ENGINEER:	GMC
DRAWING SCALE:	NTS
DRAWING SIZE:	ANSI D

DRAWING TITLE:
SHONTO SITE PANEL PUMP PANEL 240V ONE-LINE DIAGRAM

DRAWING NUMBER:
EI602



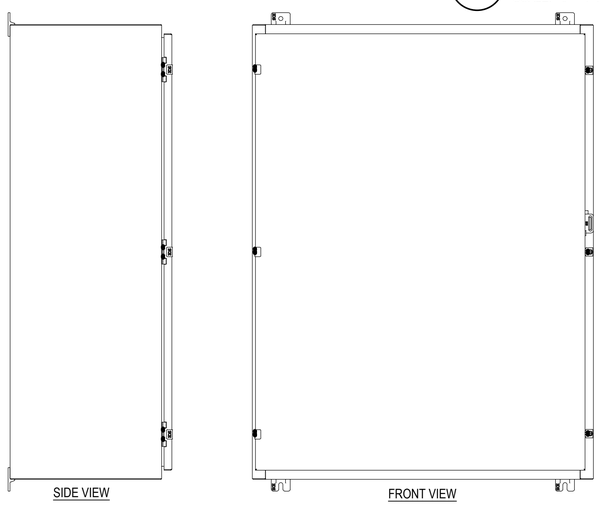
INTERIOR DEAD PANEL LAYOUT



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"

NOTES:

1. PANEL EXTERNAL LABELS, WARNINGS AND TAGGING TO BE DETERMINED FOR EACH SITE. ENCLOSURE MUST INDICATE POWER DISCONNECT IS MOUNTED INTERNALLY.
2. PANEL EXTERIOR HAS CAPABILITY FOR EXTERNALLY MOUNTED PADLOCK TO SECURE THE EXTERIOR DOOR. NO CONTROLS ARE ACCESSIBLE ON THE OUTSIDE OF THE ENCLOSURE.
3. 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.
4. 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.
5. PANEL HAS BEEN DESIGNED TO ACCOMMODATE TWO (2) THREE HORSEPOWER, 240V PUMP DRIVES. THESE DRIVES SHALL BE SPECIFIED AND PROVIDED BY THE PUMP SUPPLIER AND INSTALLED IN THIS PANEL.
6. PANEL HAS BEEN DESIGNED TO POWER A FIVE HORSEPOWER, 240V 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	DDS2-380-DHGRY	DISCONNECT, 80A, 3 POLE NON-FUSED
5	1	BUSSMANN	JM60100-1CR-2	2 POLE FUSE HOLDER, 100A MAX, CLASS J FUSES
6	2	EDISON	EHM2DU	2 POLE FUSE HOLDER, 30A MAX, MIDGET FUSES
7	2	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	RHINO	PSB24-060S	24VDC POWER SUPPLY, 60W
12	2	(BY VENDOR) NOTE 5	(BY VENDOR) NOTE 5	5HP PUMP CONTROLLER, VFD, INCLUDING RELAY CARD AND MODBUS COMMUNICATION
13	1	FUJI ELECTRIC	SC-E1G-24VDC	IEC CONTACTOR, 24VDC COIL, 32A FRAME
14	1	FUJI ELECTRIC	TK-E2-3600	THERMAL OVERLOAD RELAY, ADJUSTABLE, 24-36A
15	1	AUTOMATION DIRECT	FA-REC2	DIN RAIL MOUNT RECEPTACLE
16	5	AUTOMATION DIRECT	783-3C-24D	ICE CUBE RELAY, 24VDC, 3PDT, 15A
17	5	AUTOMATION DIRECT	783-3C-SKT	RELAY BASE, 3PDT
18	1	FUJI ELECTRIC	MS4SM-CE-ADC	TIMER RELAY, 24VDC, DPDT, ADJUSTABLE
19	1	FUJI ELECTRIC	TP411X	TIMER RELAY BASE FOR MS4SM SERIES
20	1	LITTELFUSE	ALT024-S-SW	ALTERNATING RELAY, 24VDC, INCLUDES MANUAL OVERRIDE SWITCH
21	1	LITTELFUSE	OT08PC	RELAY SOCKET, 10A
22	3	FUJI ELECTRIC	AR30PR-311BZC	30MM SWITCH, 3POS,MAINTAINED, 1NO/1NC
23	69	AUTOMATION DIRECT	KN-T12GRY	TERMINAL BLOCK, GREY, SINGLE TIER, 0.20 WIDE
24	4	AUTOMATION DIRECT	KN-ECT6GRY-25	TERMINAL BLOCK BARRIER, GREY
25	11	AUTOMATION DIRECT	KN-EB4-10	TERMINAL BLOCK END BRACKET, GREY
26	9	AUTOMATION DIRECT	KN-G12SP-10	GROUND BLOCK, GREEN_YEL, SINGLE TIER
27	4			MIDGET FUSE, 30A
28	1			5 X 20MM FUSE, 6.25A
29	2			5 X 20MM FUSE, 5A
30	3			5 X 20MM FUSE, 2A
31	2			CLASS J FUSE, 80A
32	2			CLASS J FUSE, 45A
33	1	BUSSMANN	CVRI-J-60100-M-2	FUSE BLOCK COVER FOR 100A BLOCKS, 2 POLE
34	1	BUSSMANN	CH60J2I	2 POLE FUSE HOLDER, 60A MAX, CLASS J FUSES

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	FUJI ELECTRIC	MS4SM-CE-ADC	TIMER RELAY, 24VDC, DPDT, ADJUSTABLE
6	1	FUJI 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	2			MIDGET FUSE, 30A
13	2			5 X 20MM FUSE, 6.25A
14	2			5 X 20MM FUSE, 5A
15	2			5 X 20MM FUSE, 2A
16	2			CLASS J FUSE, 80A
17	2			CLASS J FUSE, 45A

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ENCORUS GROUP
encorus.com

CLIENT:
NAVAJO TRIBAL UTILITY AUTHORITY
P.O. BOX 170
FT. DEFIANCE, AZ 86504

PROJECT:
REFURBISHMENT & UPGRADE OF EXISTING LIFT STATION
36°35'44.73"N, 110°39'43.52"W
SHONTO, ARIZONA 86054

REVISIONS:

REV	DESCRIPTION	DATE	DFTR	CHKR
0	100% SUBMISSION	2020-10-06	SBV	GMC

PROJECT NUMBER:	20244
ENGINEER:	GMC
DRAWING SCALE:	NTS
DRAWING SIZE:	ANSI D

DRAWING TITLE:
SHONTO SITE PUMP PANEL 480V FABRICATION DIAGRAM

DRAWING NUMBER:
EI702