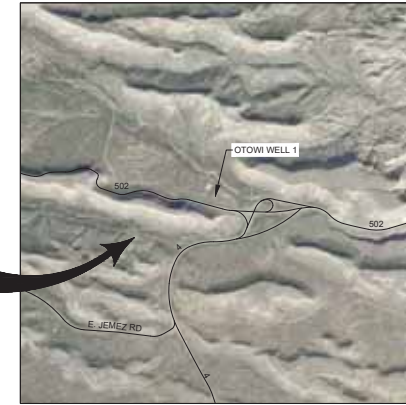


LOCATION MAP  
NOT TO SCALE

PROJECT  
LOCATION

# COUNTY OF LOS ALAMOS, NEW MEXICO

PROJECT  
LOCATION



VICINITY MAP  
NOT TO SCALE

## CONSTRUCTION PLANS FOR LOS ALAMOS COUNTY OTOWI WELL # 2 EQUIPMENT

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G-102	OVERALL SITE PLAN
G-103	MILLINGS COVER PLAN
CG-101	GRADING SITE PLAN
CU-101	YARD PIPING SITE PLAN
CU-201	YARD PIPING PLAN AND PROFILE
CU-501	WELL 2 DETIALS
CU-502	MISCELLANEOUS DETAILS
CU-503	MISCELLANEOUS DETAILS
CU-504	CONCRETE BLOCK DETAIL
CU-505	MISCELLANEOUS DETAILS
CU-506	MISCELLANEOUS DETAILS
MQ-101	WELL BUILDING AND EQUIPMENT PLAN
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S-501	DETAILS
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A-102	REFLECTED CEILING & ROOF PLANS
A-201	EXTERIOR ELEVATIONS
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A-601	SCHEDULE & DETAILS
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E-604	ELECTRICAL ONE-LINE DIAGRAM
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MS-101	MECHANICAL SITE PLAN
M-101	MECHANICAL FLOOR PLAN
M-501	MECHANICAL DETAILS

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CONSULTANTS



PROJECT NAME  
LAC OTOWI 2 WELL  
EQUIPMENT DESIGN

REV.	DATE	DESCRIPTION	BY

PROJECT NO: 20-600-201-00  
DESIGNED BY: PAR  
DRAWN BY: CRU  
CHECKED BY: LC  
DATE: OCTOBER 2020

SHEET TITLE  
COVER  
SHEET

SHEET NO:  
G-001



1. DEFLECT PIPE JOINTS AS NECESSARY TO MAINTAIN ALIGNMENT SHOWN. MAXIMUM DEFLECTION SHALL BE NO MORE THAN 75% OF PIPE MANUFACTURERS RECOMMENDATION.
2. ALL UNDERGROUND UTILITIES SHOWN ON THIS PLAN ARE APPROXIMATE LOCATIONS. CONTRACTOR SHALL VERIFY LOCATION OF ALL UNDERGROUND UTILITIES BEFORE COMMENCING WORK.
3. ALL FITTINGS AND VALVES SHALL BE RESTRAINED PER PRESSURE PIPE RESTRAINED JOINT LENGTH REQUIREMENTS ON SHEET C-505. WHERE FULL JOINT RESTRAINT LENGTH CANNOT BE CONSTRUCTED, CONCRETE BLOCKING SHALL BE USED PER SHEET C-504.

CONSULTANTS



SEAL

NAME \_\_\_\_\_

LAC OTOWI 2 WELL  
EQUIPMENT DESIGN

[illegible]

PROJECT NO:	20-600-201-00
DESIGNED BY:	PAR
DRAWN BY:	CRU
CHECKED BY:	LC
DATE:	OCTOBER 2020

SHEET TITLE

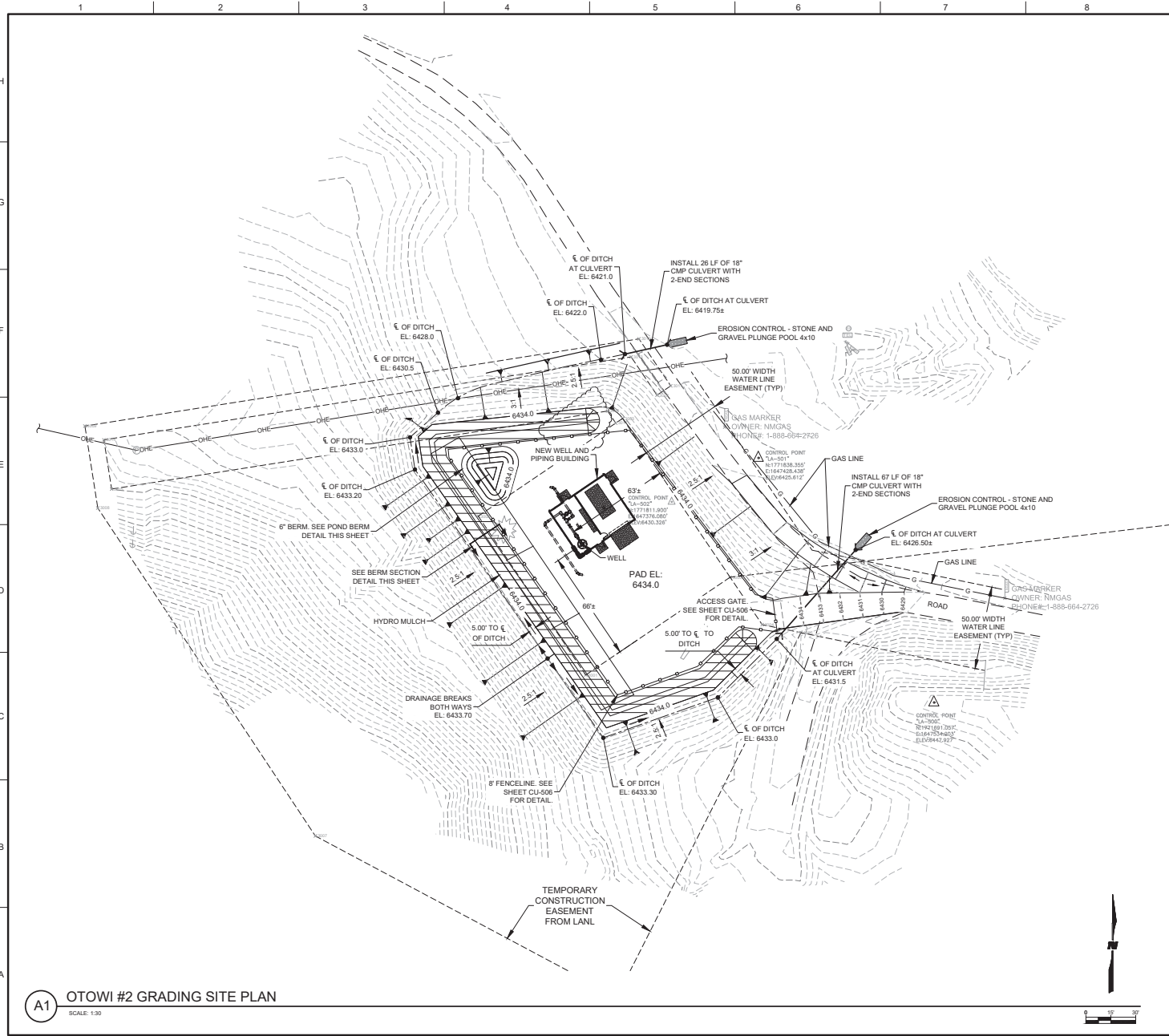
OVERALL  
SITE PLAN

SHEET NO:

G-102

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2/3/2021

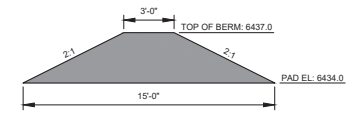


A1 OTOWI #2 GRADING SITE PLAN

SCALE: 1/32"

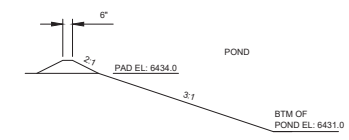
### GENERAL NOTES

1. CONTRACTOR TO PROVIDE EXCAVATION PLAN FOR RELEASE TO LOS ALAMOS COUNTY AND THE ENGINEER. BACKFILL SHALL MEET FILL REQUIREMENTS AS AGREED.
2. ALL SELECT FILL SHALL MEET LOS ALAMOS COUNTY STD REQUIREMENTS AND THE REQUIREMENTS OF THE SPECIFICATIONS.
3. ALL BACKFILL AROUND THE WELL PAD SHALL BE COMPACTED TO A MINIMUM 95% COMPACTION PER ASTM D 1557.
4. HYDRO MULCH SEEDING FOR ALL DISTURBED SLOPES.



BERM SECTION DETAIL

NOT TO SCALE



POND BERM SECTION DETAIL

NOT TO SCALE

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SEAL

PROJECT NAME  
**LAC OTOWI 2 WELL  
EQUIPMENT DESIGN**

REV.	DATE	DESCRIPTION	BY

PROJECT NO: 20-600-201-00  
DESIGNED BY: PAR  
DRAWN BY: CRU  
CHECKED BY: LC  
DATE: OCTOBER 2020

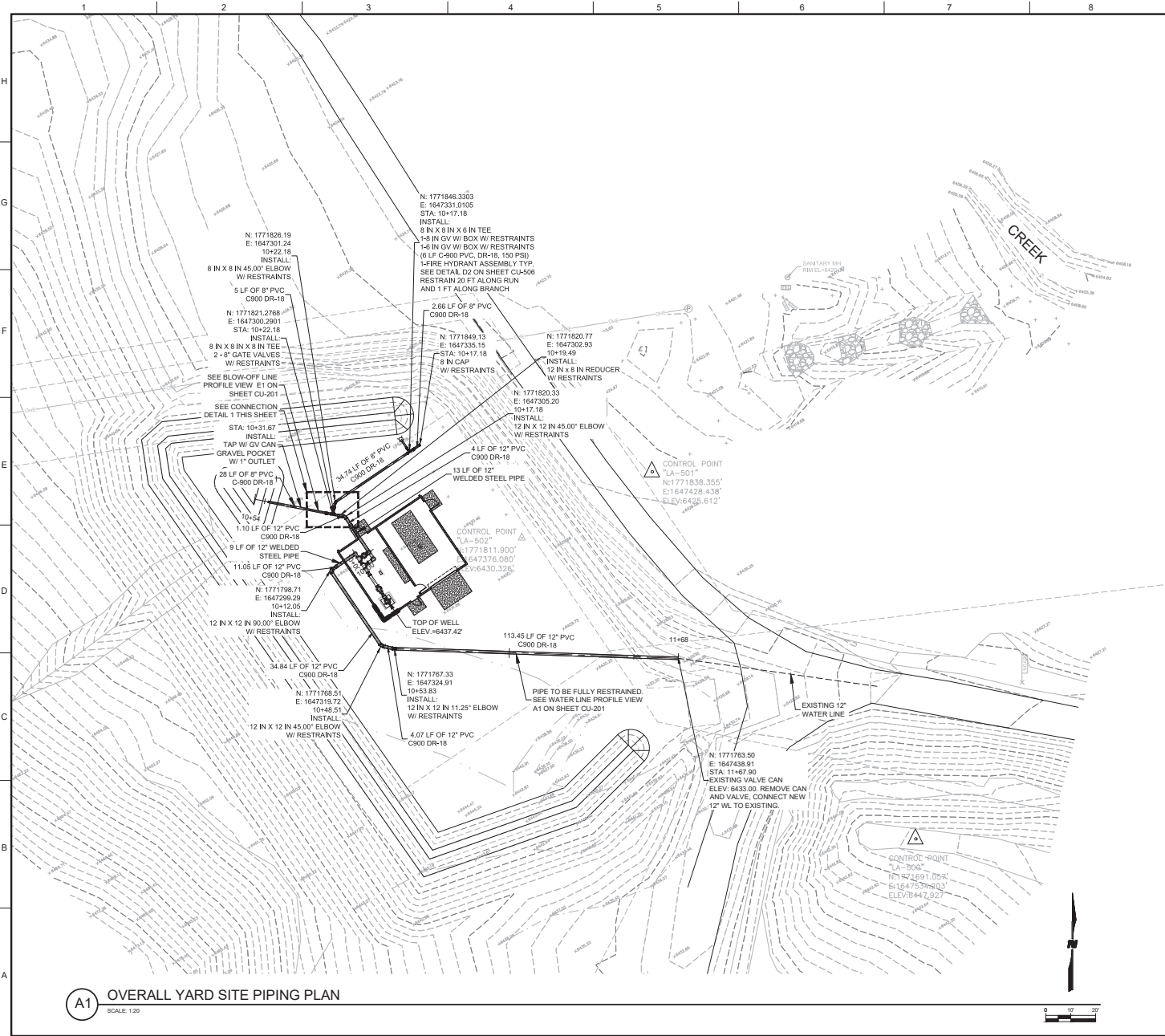
SHEET TITLE  
**GRADING  
SITE PLAN**

SHEET NO:  
**CG-101**



M:\MSD\20-600-201-002\_Disciplines\02\_sheets - utilities\02\_CIVIL\206201\_YARD PIPING\_CU-101-102.dwg

2/23/2021



A1 OVERALL YARD SITE PIPING PLAN

SCALE: 1/20

### GENERAL NOTES

1. DEFLECT PIPE JOINTS AS NECESSARY TO MAINTAIN ALIGNMENT SHOWN. MAXIMUM DEFLECTION SHALL BE NO MORE THAN 75% OF PIPE MANUFACTURERS RECOMMENDATION.
2. ALL UNDERGROUND UTILITIES SHOWN ON THIS PLAN ARE APPROXIMATE LOCATIONS. CONTRACTOR SHALL VERIFY LOCATION OF ALL UNDERGROUND UTILITIES BEFORE COMMENCING WORK.
3. ALL FITTINGS AND VALVES SHALL BE RESTRAINED PER PRESSURE PIPE RESTRAINED JOINT LENGTH REQUIREMENTS ON SHEET C-505. WHERE FULL JOINT RESTRAINT LENGTH CANNOT BE CONSTRUCTED, CONCRETE BLOCKING SHALL BE USED PER SHEET C-504.

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PROJECT NAME  
**LAC OTOWI 2 WELL  
EQUIPMENT DESIGN**

REV.	DATE	DESCRIPTION	BY

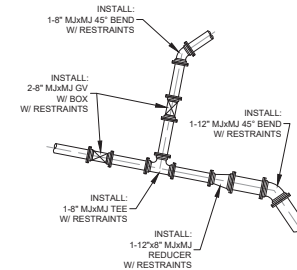
PROJECT NO: 20-600-201-00  
DESIGNED BY: PAR  
DRAWN BY: CRU  
CHECKED BY: LC  
DATE: OCTOBER 2020

SHEET TITLE

**YARD PIPING  
SITE PLAN**

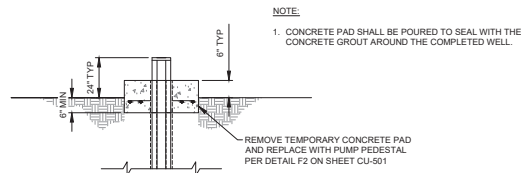
SHEET NO:

**CU-101**

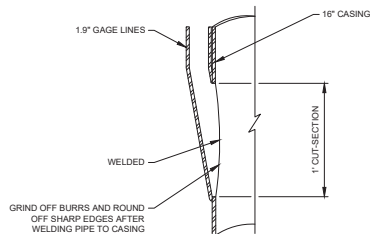


CONNECTION DETAIL 1

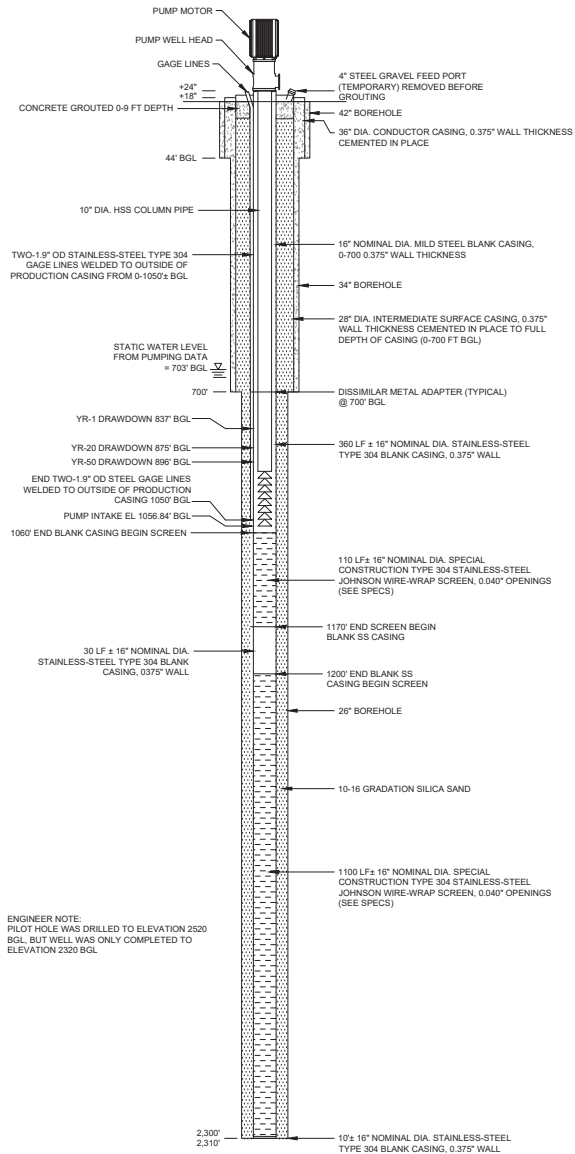
SCALE: NTS



**D3** EXISTING WELL HEAD SECTION  
NOT TO SCALE



**A2** GAGE LINE CONNECTION DETAIL  
NOT TO SCALE (MODIFIED IN THE FIELD)



**A6** DRILLED WELL SECTION DETAIL  
NOT TO SCALE

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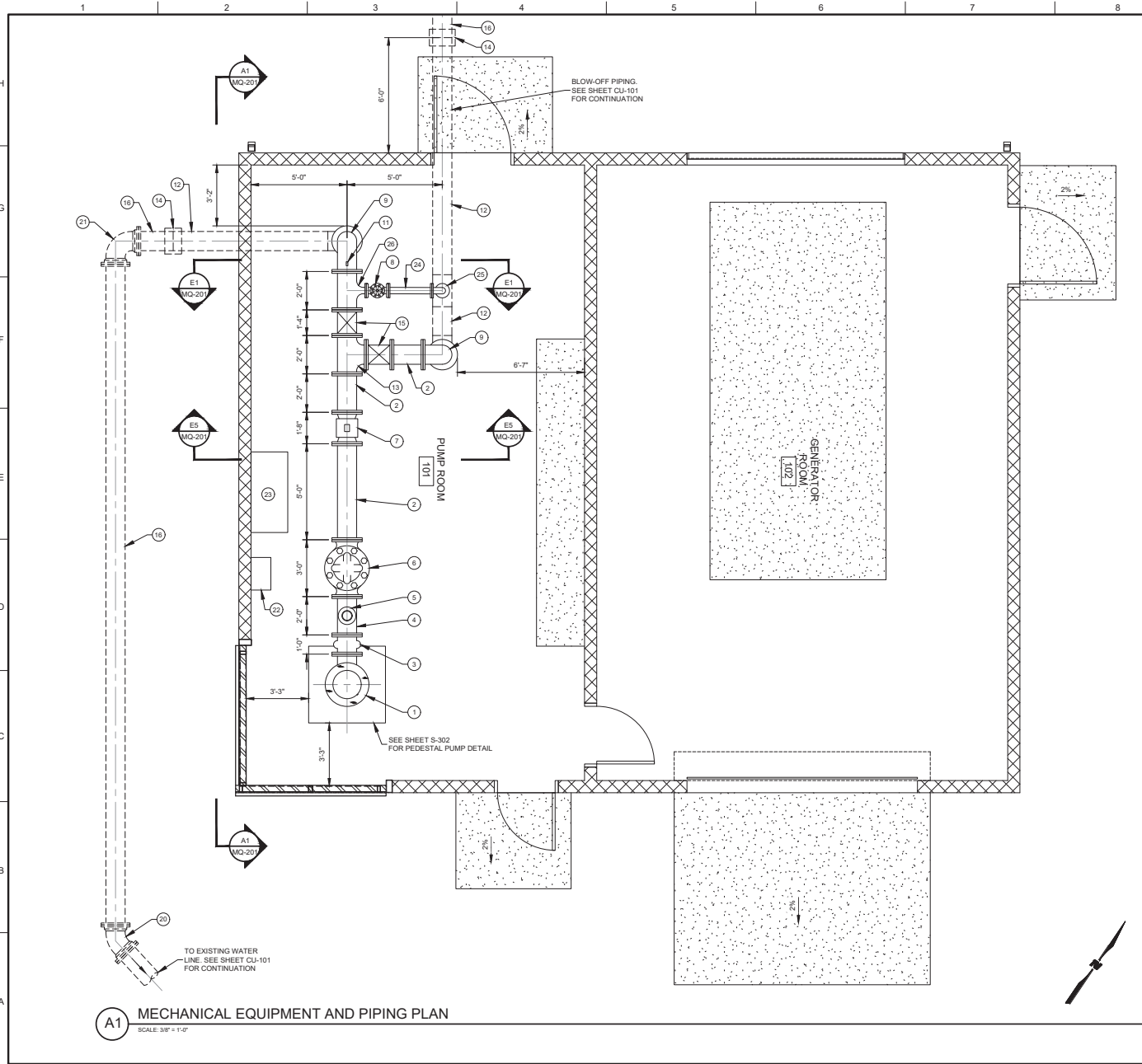
PROJECT NAME  
**LAC OTOWI 2 WELL  
EQUIPMENT DESIGN**

REV.	DATE	DESCRIPTION	BY

PROJECT NO: 20-600-201-00  
DESIGNED BY: PAR  
DRAWN BY: CRU  
CHECKED BY: LC  
DATE: OCTOBER 2020

SHEET TITLE  
**WELL 2  
DETAILS**

SHEET NO:  
**CU-501**



**A1 MECHANICAL EQUIPMENT AND PIPING PLAN**  
SCALE: 3/8" = 1'-0"

# EQUIPMENT SCHEDULE

ID NO.	ITEM DESCRIPTION	QTY
1	WELL PUMP DISCHARGE HEAD AND MOTOR	1
2	12" DI PIPE SPOOL	-
3	12" PROOD. STYLE 341, 275-PSI WORKING PRESSURE EXPANSION JOINT OR ENGINEER APPROVED EQUIVALENT WITH TWO (2) LIMIT RODS, ONE EACH SIDE OF EXPANSION JOINT.	1
4	12" x 6" FLANGED TEE	1
5	2" COMBINATION AIR RELEASE AND VACUUM VALVE. SEE DETAIL SHEET CU-502	1
6	12" W/LINE CHECK VALVE, CLVA VAL. MODEL B1-02 OR ENGINEER APPROVED EQUAL.	1
7	12" KROMAG FLOW METER (FPC-100) REMOTE MOUNTED SIGNAL CONVERTER AND ENVIRONMAG 2000 SERIES MAGNETIC INDUCTIVE FLOW METER OR ENGINEER APPROVED EQUAL.	1
8	4" CLVA VAL. MODEL NO. 100-2000 REDUCED PORT ANTI-CAVITATION HYDROL VALVE WITH CLVA VAL. 653-01 PRESSURE RELIEF AND SURGE ANTICIPATOR VALVE PILOT SYSTEM OR ENGINEER APPROVED EQUAL.	1
9	12" DIP 90° BEND	3
10	ADJUSTABLE PIPE SUPPORTS. SEE DETAIL SHEET CU-502	5
11	PRESSURE GAUGE WITH SAMPLE VALVE. SEE DETAIL SHEET CU-502	1
12	12" WELDED STAINLESS STEEL PIPE	-
13	12" DIP TEE	1
14	12" TRANSITION COUPLING	1
15	12" DATE VALVE (STRAIGHT DRIVE & HAND WHEEL OPERATOR)	1
16	12" PVC PIPE	-
17	12" x 8" MJ x MJ REDUCER	1
18	8" PVC PIPE C100 DR-18	-
19	8" TRANSITION COUPLING	1
20	12" STAINLESS STEEL 45° BEND MJ x MJ	3
21	12" STAINLESS STEEL 90° BEND MJ x MJ	1
22	VTE OIL LUBRICATOR CONTROL AND MONITORING DEVICE	1
23	OIL DRUM AND MOUNTING RACK	1
24	4" DI PIPE SPOOL	-
25	4" DIP 90° BEND MJ x MJ	1
26	12" x 4" DIP TEE MJ x MJ	1
27	12" x 4" DIP REDUCER MJ x MJ	1

## GENERAL NOTES

1. SYSTEM WORKING PRESSURE IS 245-PSI. PIPING, VALVES, FITTINGS, AND APPURTENANCES SHALL HAVE A TEST PRESSURE RATING OF 1.5-TIME'S WORKING PRESSURE. ALL FLANGES SHALL BE ANSI B16.5 300-LB FLANGES.

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CONSULTANTS



SEAL

**LAC OTOWI 2 WELL  
EQUIPMENT DESIGN**

PROJECT NAME

REV.	DATE	DESCRIPTION	BY

PROJECT NO: 20-600-201-00  
DESIGNED BY: PAR  
DRAWN BY: CRU  
CHECKED BY: LC  
DATE: OCTOBER 2020

SHEET TITLE

**WELL BUILDING AND  
EQUIPMENT PLAN**

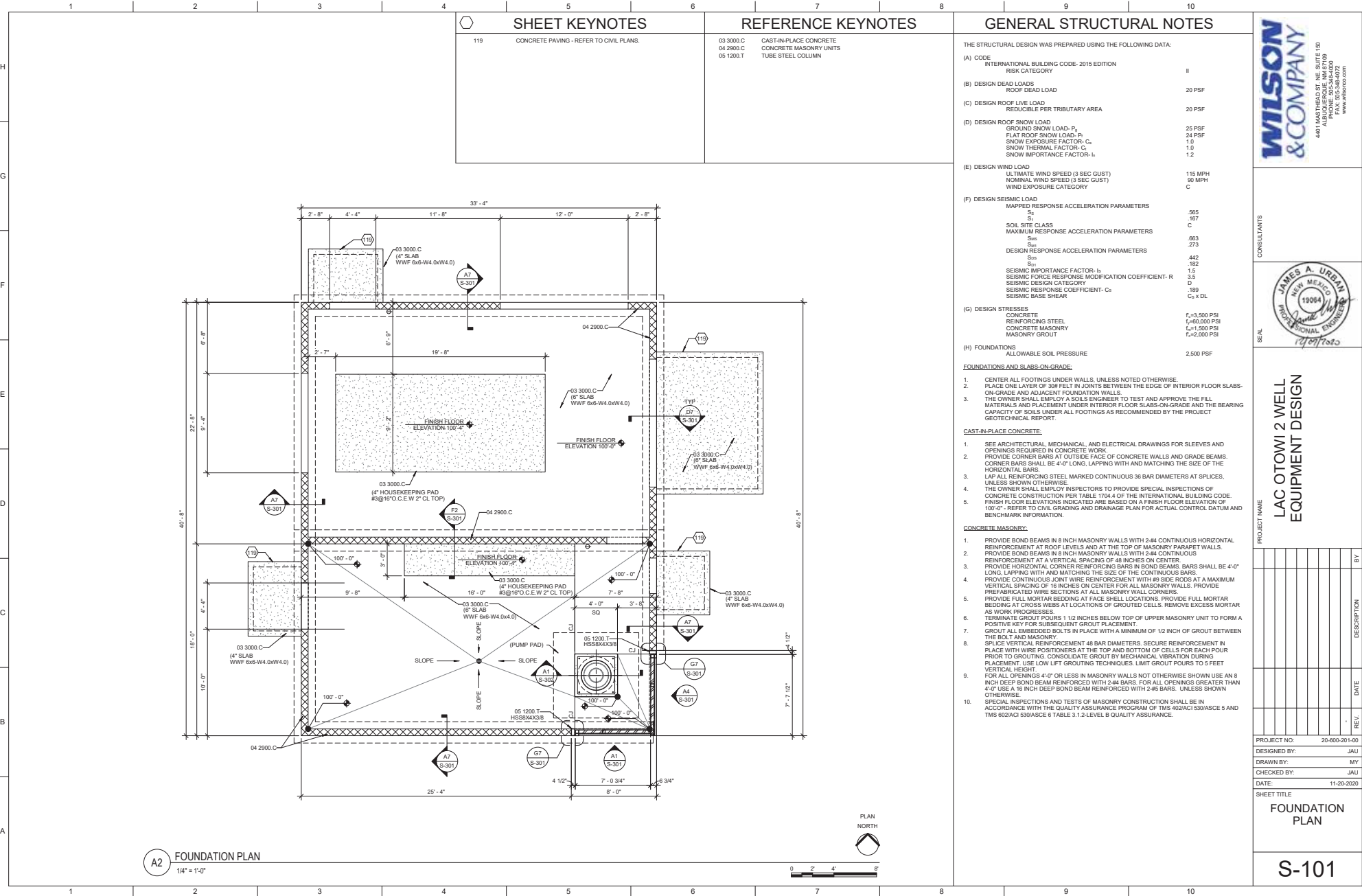
SHEET NO:

**MQ-101**



1. SYSTEM WORKING PRESSURE IS 245-PSI. PIPING, VALVES, FITTINGS, AND APPURTENANCES SHALL HAVE A TEST PRESSURE RATING OF 1.5-TIMES WORKING PRESSURE. ALL FLANGES SHALL BE ANSI B16.5 300-LB FLANGES.

SHEET NO:  
MQ-201



**WILSON & COMPANY**

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CONSULTANTS

PROJECT NAME

**LAC OTOWI 2 WELL  
EQUIPMENT DESIGN**

SEAL

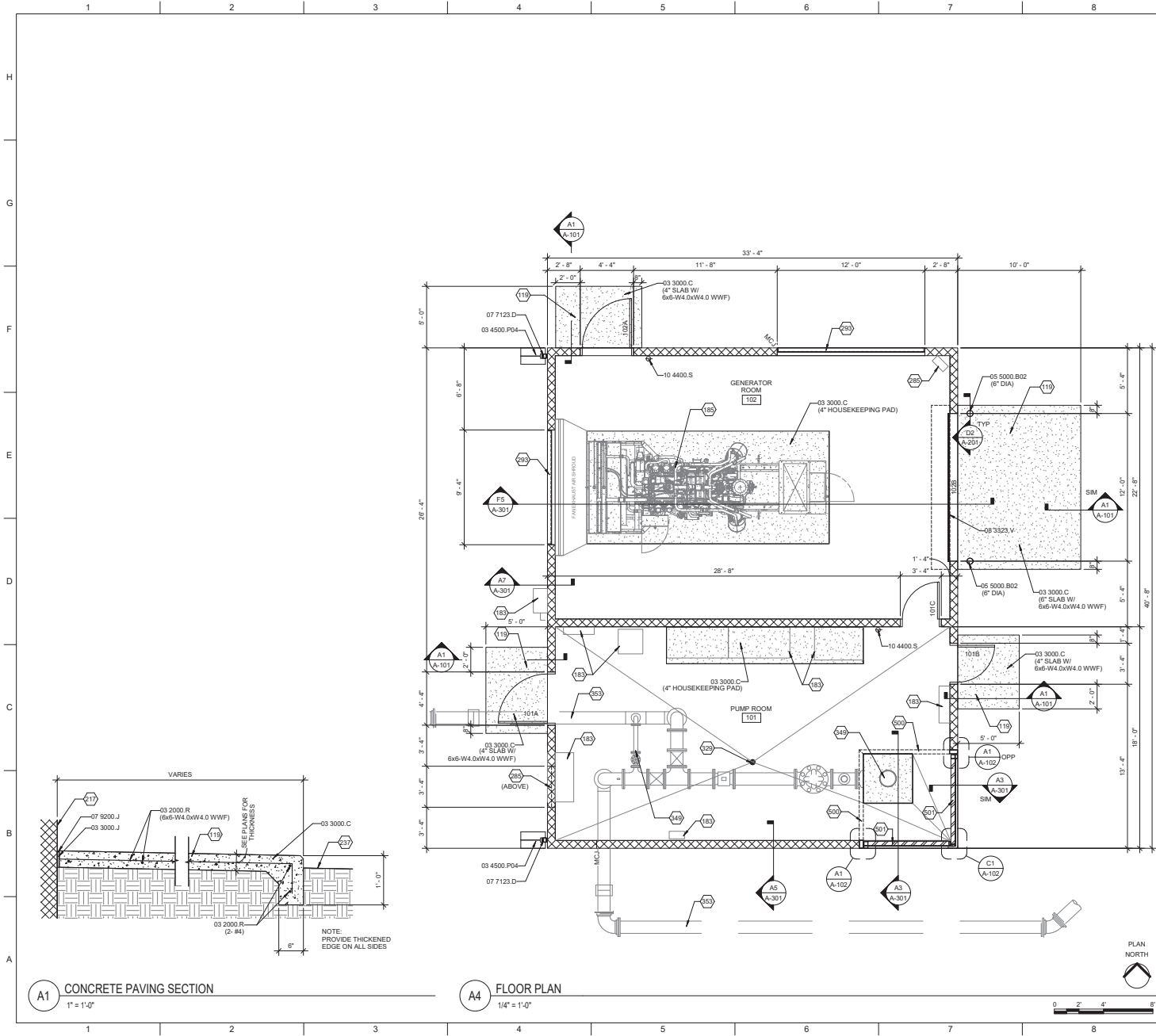
PROJECT NO.	DESIGNED BY	DRAWN BY	CHECKED BY	DATE	REV.	DESCRIPTION	BY
20-800-201-00	JAU	MY	JAU	11-20-2020			

SHEET TITLE

**FOUNDATION  
PLAN**

**S-101**





## REGULATORY INFORMATION

CODE ANALYSIS: LAC OTOWI 2 WELL EQUIPMENT DESIGN

- |    |  |   |
|----|--|---|
| A. | PROJECT ADDRESS: LOS ALAMOS CO. NEW MEXICO   |   |
| B. | APPLICABLE REGULATORY INFORMATION:   |   |
| 1. | 2015 NEW MEXICO COMMERCIAL BUILDING CODE   |   |
| 2. | 2015 NEW MEXICO PLUMBING CODE  |   |
| 3. | 2015 NEW MEXICO MECHANICAL CODE  |   |
| 4. | 2015 NEW MEXICO ELECTRICAL CODE  |   |
| 5. | 2015 NEW MEXICO ENERGY CONSERVATION CODE   |   |
| 6. | ICC/ANSI A117.1-2009   |   |
| C. | OCCUPANCY GROUP: UTILITY AND MISCELLANEOUS, GROUP U (SECTION 312.1, IBC)                           |   |
| D. | CONSTRUCTION TYPE: V-B (TABLE 601, IBC)  |   |
| E. | AUTOMATIC SPRINKLER SYSTEM:  | NOT REQUIRED;<br>NOT PROVIDED IN ACCORDANCE<br>WITH SECTION 903.2.1 IBC |
| F. | ALLOWABLE BUILDING AREA: (GROSS) 5,500 SF (PER TABLE 506.2, IBC)                                   |   |
|    | ACTUAL BUILDING AREA: (GROSS) 1,356 SF   |   |
|    | (GROSS, AS MEASURED TO EXTERIOR FACE OF WALLS)   |   |
| G. | ALLOWABLE HEIGHT: ALLOWABLE: 65 FEET (PER TABLE 504.3, IBC)  |   |
|    | APPROXIMATE HEIGHT: 18 FEET  |   |
| H. | ALLOWABLE STORIES: ALLOWABLE: 2 STORIES (PER TABLE 504.4, IBC)                                     |   |
|    | ACTUAL STORIES: 1 STORY  |   |
| I. | FIRE-RESISTANCE RATING REQUIREMENTS FOR EXTERIOR WALLS:  |   |
|    | ≥ 2 HOUR   |   |
|    | NORTH, EAST, SOUTH AND WEST WALLS (FIRE SEPARATION DISTANCE = GREATER THAN 10' PER TABLE 602, IBC) |   |
| J. | INTERIOR WALL AND CEILING FINISH REQUIREMENTS BY OCCUPANCY (TABLE 703.1.1)                         |   |
|    | EXIT ENCLOSURES AND EXIT PASSAGeways: FLAME SPREAD INDEX = NO RESTRICTIONS                         |   |
|    | ROOMS AND ENCLOSED SPACES: FLAME SPREAD INDEX = NO RESTRICTIONS                                    |   |
| K. | MINIMUM ROOF COVERING CLASSIFICATION: CLASS C (TABLE 1505.1, IBC)                                  |   |
| L. | OCCUPANCY SEPARATION: NONE REQUIRED (TABLE 508.4)  |   |
| M. | MAXIMUM OCCUPANT LOAD FOR SPACES WITH ONE EXIT OR EXIT ACCESS DOORWAY (TABLE 1006.2.1)             | 45 OCC  |
|    | OCCUPANT LOAD:   |   |
|    | ACCESSORY STORAGE  | 1,356 SF / 300 = 5 OCC  |

## GENERAL SHEET NOTES

1. REFER TO SHEET A-601 FOR DOOR SCHEDULE.

## REFERENCE KEYNOTES

03 2000.R	REINFORCING STEEL
03 3000.C	CAST-IN-PLACE CONCRETE
03 3000.J	JOINT FILLER
03 4500.P04	PRECAST CONCRETE SPLASH BLOCK
05 5000.B02	BOLLARD
07 7123.D	DOWNSPOUT
07 9200.J	JOINT SEALANT
08 3323.V	OVERHEAD COILING DOOR
10 4400.S	SURFACE MOUNTED FIRE EXTINGUISHER

## SHEET KEYNOTES

119	CONCRETE PAVING - REFER TO CIVIL PLANS.
183	ELECTRICAL EQUIPMENT.
185	ELECTRICAL GENERATOR.
217	FACE OF BUILDING.
237	FINISH GRADE. REFER TO CIVIL PLANS FOR ELEVATIONS.
285	MECHANICAL EQUIPMENT.
293	MECHANICAL LOUVER.
329	PLUMBING FLOOR DRAIN.
349	PROCESS EQUIPMENT.
353	PROCESS PIPING.
500	DASHED LINES INDICATES TRANSLUCENT ROOF PANEL ABOVE.
501	INFIL FLOOR FRAME WITH 4" METAL STUDS BETWEEN STUDS. 24"OC MAX SPACING.

## LEGEND

- MCJ

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CONSULTANTS



SEAL

LAC OTOWI 2 WELL  
EQUIPMENT DESIGN

PROJECT NAME

[illegible]

PROJECT NO: 20-600-201-00

DESIGNED BY: TJR

DRAWN BY: SLW

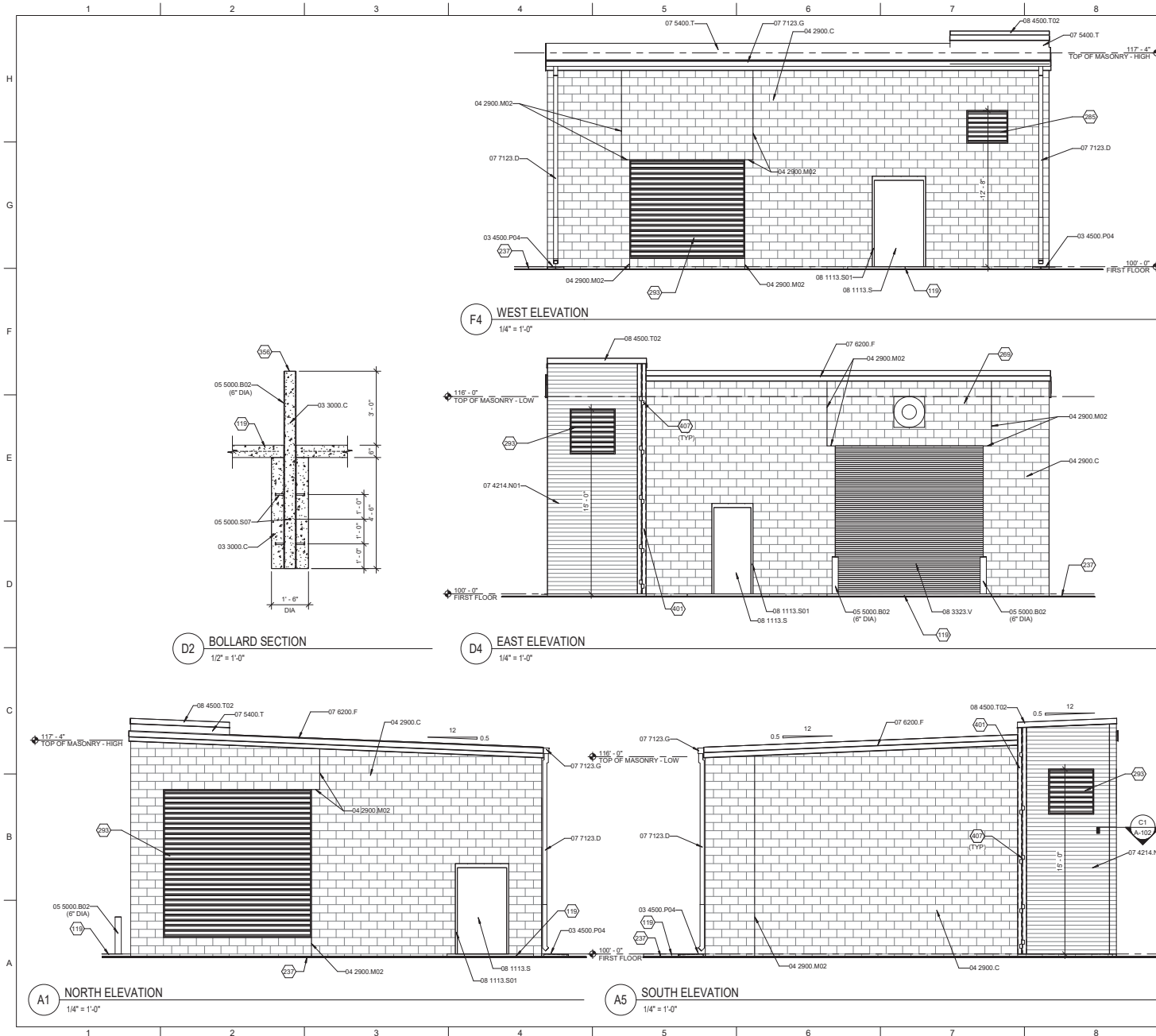
CHECKED BY: CRG

DATE: 02-01-2021

SHEET TITLE

## FLOOR PLAN

A-101



## GENERAL SHEET NOTES

1. FINISH FLOOR ELEVATIONS INDICATED ARE BASED ON AN ELEVATION OF 100'-0" - REFER TO CIVIL GRADING AND DRAINAGE PLAN FOR CONTROL DATUM AND BENCHMARK INFORMATION.
2. REFER TO STRUCTURAL FOUNDATION PLAN FOR CONCRETE AND MASONRY REINFORCING.

## REFERENCE KEYNOTES

- 03 3000.C CAST-IN-PLACE CONCRETE
- 03 4500.P04 PRECAST CONCRETE SPLASH BLOCK
- 04 2900.C CONCRETE MASONRY UNITS
- 04 2900.M02 MASONRY CONTROL JOINT
- 05 5000.B02 BOLLARD
- 05 5000.S07 STUD ANCHOR
- 07 4214.N01 INSULATING METAL WALL PANEL
- 07 5400.T TPO MEMBRANE
- 07 6200.F FASCIA
- 07 7123.D DOWNSPOUT
- 07 7123.G GUTTER
- 08 1113.S STEEL DOOR
- 08 1113.S01 STEEL FRAME
- 08 3323.V OVERHEAD COILING DOOR
- 08 4500.T02 TRANSLUCENT ROOF ASSEMBLY

## SHEET KEYNOTES

- 119 CONCRETE PAVING - REFER TO CIVIL PLANS.
- 237 FINISH GRADE. REFER TO CIVIL PLANS FOR ELEVATIONS.
- 269 MECHANICAL DUCTWORK
- 285 MECHANICAL EQUIPMENT
- 293 MECHANICAL LOUVER
- 356 STRIKE CONCRETE FLUSH WITH THE TOP OF STEEL
- 401 STRUCTURAL FRAMING MEMBER(S)
- 407 STRUCTURAL HINGE

## LEGEND



CONSULTANTS



PROJECT NAME  
**LAC OTOWI 2 WELL  
EQUIPMENT DESIGN**

PROJECT NAME

REV.	DATE	DESCRIPTION	BY

PROJECT NO: 20-600-201-00

DESIGNED BY: TJR

DRAWN BY: SLW

CHECKED BY: CRG

DATE: 02-01-2021

SHEET TITLE

EXTERIOR  
ELEVATIONS

A-201



### GENERAL NOTES

- A. REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
- B. REFER TO ELECTRICAL ONE-LINE DIAGRAM AND ENLARGED PLANS FOR MORE INFORMATION.
- C. REFER TO INSTALLATION DETAILS FOR ADDITIONAL INFORMATION.
- D. ALL UNDERGROUND LINES SHOWN ARE SHOWN FOR DIAGRAMMATIC PURPOSES ONLY. CONTRACTOR SHALL COORDINATE ROUTING OF ALL UNDERGROUND CONDUITS WITH ALL TRADES. CONTRACTOR SHALL FIELD VERIFY ALL EXISTING UNDERGROUND LINES PRIOR TO ANY EXCAVATION TO AVOID ANY DAMAGE TO EXISTING LINES. CONTRACTOR PROVIDE ENGINEER PROPOSED ROUTING AND CONDUIT SIZING OF ALL UNDERGROUND CONDUITS PRIOR TO ANY WORK TO BEGIN. CONTRACTOR SHALL COORDINATE WITH ALL UTILITIES AND NMOT (OR AHI) FOR ROADWAY CROSSING. ALL CONDUITS UNDER ROADWAY SHALL BE CONDUIT ENCASED.
- E. ALL UNDERGROUND CONDUITS SHALL BE SCHEDULE 80 PVC UNLESS OTHERWISE NOTED. ALL UNDERGROUND ELBOWS SHALL BE LONG SWEEP. ALL CONDUITS ABOVE GRADE SHALL HAVE A TRANSITION FROM 80 TO 40 PVC TO PROTECT CONDUITS FROM DAMAGE. CONTRACTOR SHALL WRAP ALL RIGID CONDUIT UNDERGROUND FOR PROTECTION WITH RUBERIZED TAPE WITH 1" OVERLAP.
- F. THE SITE PLAN MAY NOT REPRESENT ALL UNDERGROUND MANHOLES OR HANDHOLES. CONTRACTOR SHALL PROVIDE ANY REQUIRED MANHOLES AND HANDHOLES AS REQUIRED BY THE SPECIFICATIONS. CONTRACTOR SHALL INDICATE ALL MANHOLES AND HANDHOLES ON UNDERGROUND CONDUIT SUBMITTAL AS REFERENCE IN GENERAL NOTE D. ALL MANHOLES AND HANDHOLES SHALL BE HEAVY TRAFFIC RATED WITH METAL COVERS.
- G. ALL UNDERGROUND CONDUITS SHALL BE INSTALLED WITH PULL STRINGS AND GROUNDING CONDUCTORS SIZED PER NEC. ANY COMMUNICATION CONDUITS SHALL BE INSTALLED WITH A MINIMUM OF #2 AWG GIC GROUNDING CONDUCTOR.
- H. PROVIDE AS-BUILT INFORMATION FOR ENGINEER APPROVAL AT COMPLETION OF CONSTRUCTION.

## KEYNOTES

1. CONTRACTOR SHALL COORDINATE WITH LOCAL UTILITIES FOR CONDUIT SERVICE RISER FINAL LOCATION PRIOR TO ANY WORK TO BEGIN. CONTRACTOR SHALL PROVIDE ALL NECESSARY INFORMATION TO LOCAL UTILITIES REGARDING CONDUIT UTILITIES RISERS PER LOCAL UTILITY REQUIREMENTS.
2. CONTRACTOR SHALL PROVIDE UTILITY TRANSFORMER EQUIPMENT AND PAD PER UTILITY STANDARD CONSTRUCTION REQUIREMENTS. CONTRACTOR SHALL PROVIDE BOLLARDS AROUND PERIMETER OF TRANSFORMER FOR PROTECTIVE ELEVATION TO ELECTRICAL ONE-LINE DIAGRAM FOR ADDITIONAL INFORMATION.
3. CONTRACTOR TO PROVIDE ALL CONDUIT AND WIRING FROM UTILITY TRANSFORMER SECONDARY TO DS-MAIN. CONTRACTOR SHALL PROVIDE ALL UTILITY METERING WIRING AND EQUIPMENT PER UTILITY STANDARDS. CONTRACTOR SHALL COORDINATE WITH UTILITY FOR ALL REQUIREMENTS PRIOR TO ANY WORK TO BEGIN. CONTRACTOR SHALL PROVIDE ELECTRICAL ONE-LINE DIAGRAM FOR ADDITIONAL INFORMATION.

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CONSULTANTS



PROJECT NAME

LAC OTOWI 2 WELL  
EQUIPMENT DESIGN

[illegible]

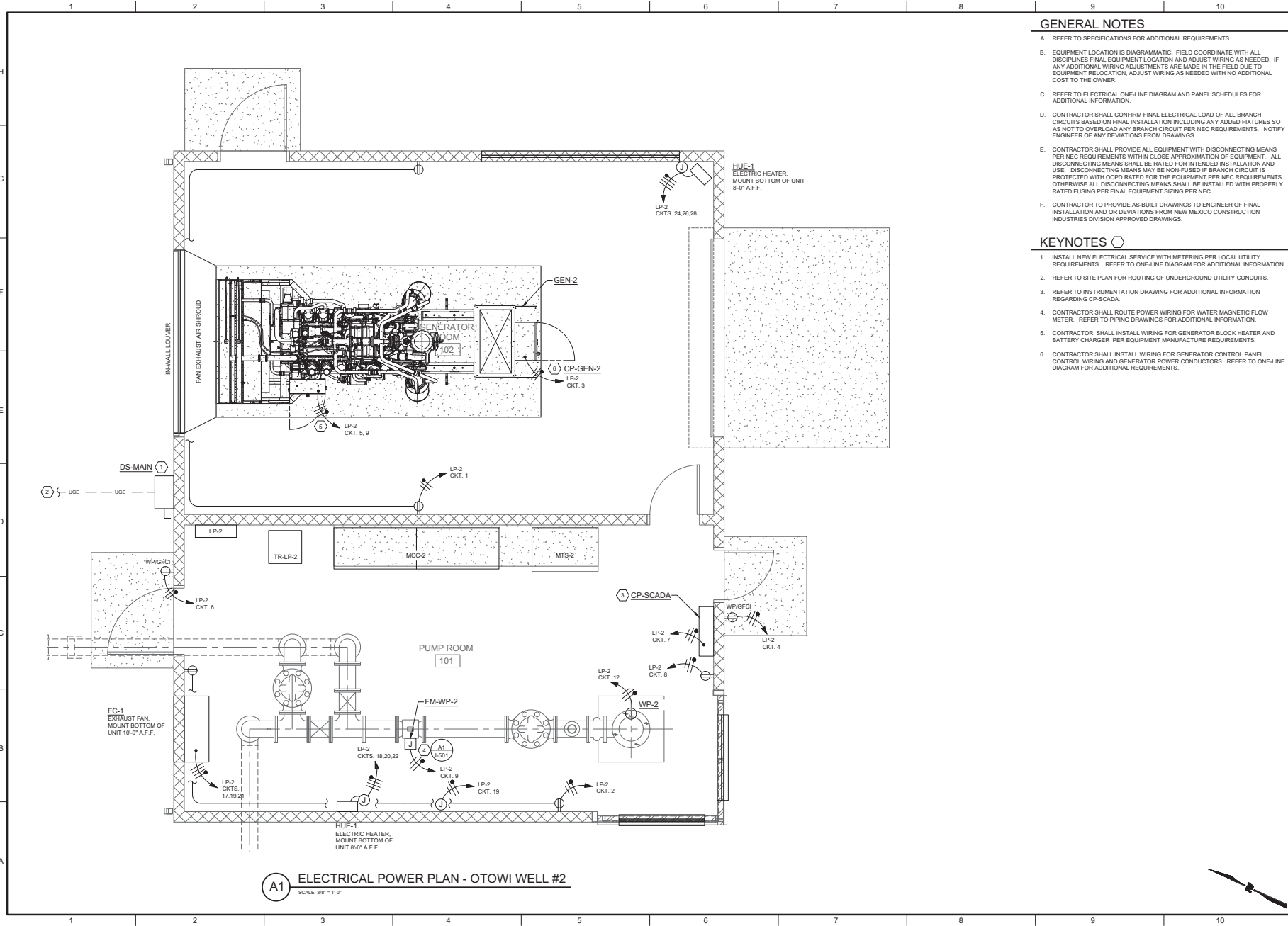
PROJECT NO:	20-600-201-00
DESIGNED BY:	PAR
DRAWN BY:	CRU
CHECKED BY:	LC
DATE:	OCTOBER 2020

SHEET TITLE

ELECTRICAL  
SITE PLAN

SHEET NO: ES-101

2/5/2021 \\wilsonna.com\ndiv\me\SD\20-600-201-0012\_Disciplines\ Sheets - electrical\E-101.dwg



GENERAL NOTES

- A. REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
- B. EQUIPMENT LOCATION IS DIAGRAMMATIC. FIELD COORDINATE WITH ALL DISCIPLINES FINAL EQUIPMENT LOCATION AND ADJUST WIRING AS NEEDED. IF ANY ADDITIONAL WIRING ADJUSTMENTS ARE MADE IN THE FIELD DUE TO EQUIPMENT RELOCATION, ADJUST WIRING AS NEEDED WITH NO ADDITIONAL COST TO THE OWNER.
- C. REFER TO ELECTRICAL ONE-LINE DIAGRAM AND PANEL SCHEDULES FOR ADDITIONAL INFORMATION.
- D. CONTRACTOR SHALL CONFIRM FINAL ELECTRICAL LOAD OF ALL BRANCH CIRCUITS BASED ON FINAL INSTALLATION INCLUDING ANY ADDED FIXTURES SO AS NOT TO OVERLOAD ANY BRANCH CIRCUIT PER NEC REQUIREMENTS. NOTIFY ENGINEER OF ANY DEVIATIONS FROM DRAWINGS.
- E. CONTRACTOR SHALL PROVIDE ALL EQUIPMENT WITH DISCONNECTING MEANS PER NEC REQUIREMENTS WITHIN CLOSE APPROXIMATION OF EQUIPMENT. ALL DISCONNECTING MEANS SHALL BE RATED FOR INTENDED INSTALLATION AND USE. DISCONNECTING MEANS MAY BE NON-FUSED IF BRANCH CIRCUIT IS PROTECTED WITH OCPD RATED FOR THE EQUIPMENT PER NEC REQUIREMENTS. OTHERWISE ALL DISCONNECTING MEANS SHALL BE INSTALLED WITH PROPERLY RATED FUSING PER FINAL EQUIPMENT SIZING PER NEC.
- F. CONTRACTOR TO PROVIDE AS-BUILT DRAWINGS TO ENGINEER OF FINAL INSTALLATION AND OR DEVIATIONS FROM NEW MEXICO CONSTRUCTION INDUSTRIES DIVISION APPROVED DRAWINGS.

KEYNOTES

- 1. INSTALL NEW ELECTRICAL SERVICE WITH METERING PER LOCAL UTILITY REQUIREMENTS. REFER TO ONE-LINE DIAGRAM FOR ADDITIONAL INFORMATION.
- 2. REFER TO SITE PLAN FOR ROUTING OF UNDERGROUND UTILITY CONDUITS.
- 3. REFER TO INSTRUMENTATION DRAWING FOR ADDITIONAL INFORMATION REGARDING CP-SCADA.
- 4. CONTRACTOR SHALL ROUTE POWER WIRING FOR WATER MAGNETIC FLOW METER. REFER TO PIPING DRAWINGS FOR ADDITIONAL INFORMATION.
- 5. CONTRACTOR SHALL INSTALL WIRING FOR GENERATOR BLOCK HEATER AND BATTERY CHARGER PER EQUIPMENT MANUFACTURE REQUIREMENTS.
- 6. CONTRACTOR SHALL INSTALL WIRING FOR GENERATOR CONTROL PANEL CONTROL WIRING AND GENERATOR POWER CONDUCTORS. REFER TO ONE-LINE DIAGRAM FOR ADDITIONAL REQUIREMENTS.

A1 ELECTRICAL POWER PLAN - OTOWI WELL #2  
SCALE: 3/8" = 1'-0"

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ALBUQUERQUE, NM 87111  
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CONSULTANTS

PROJECT NAME

LAC OTOWI 2 WELL  
EQUIPMENT DESIGN

REV.	DATE	DESCRIPTION	BY

PROJECT NO: 20-600-201-00

DESIGNED BY: TLR

DRAWN BY: TLR

CHECKED BY: DG

DATE: OCTOBER 2020

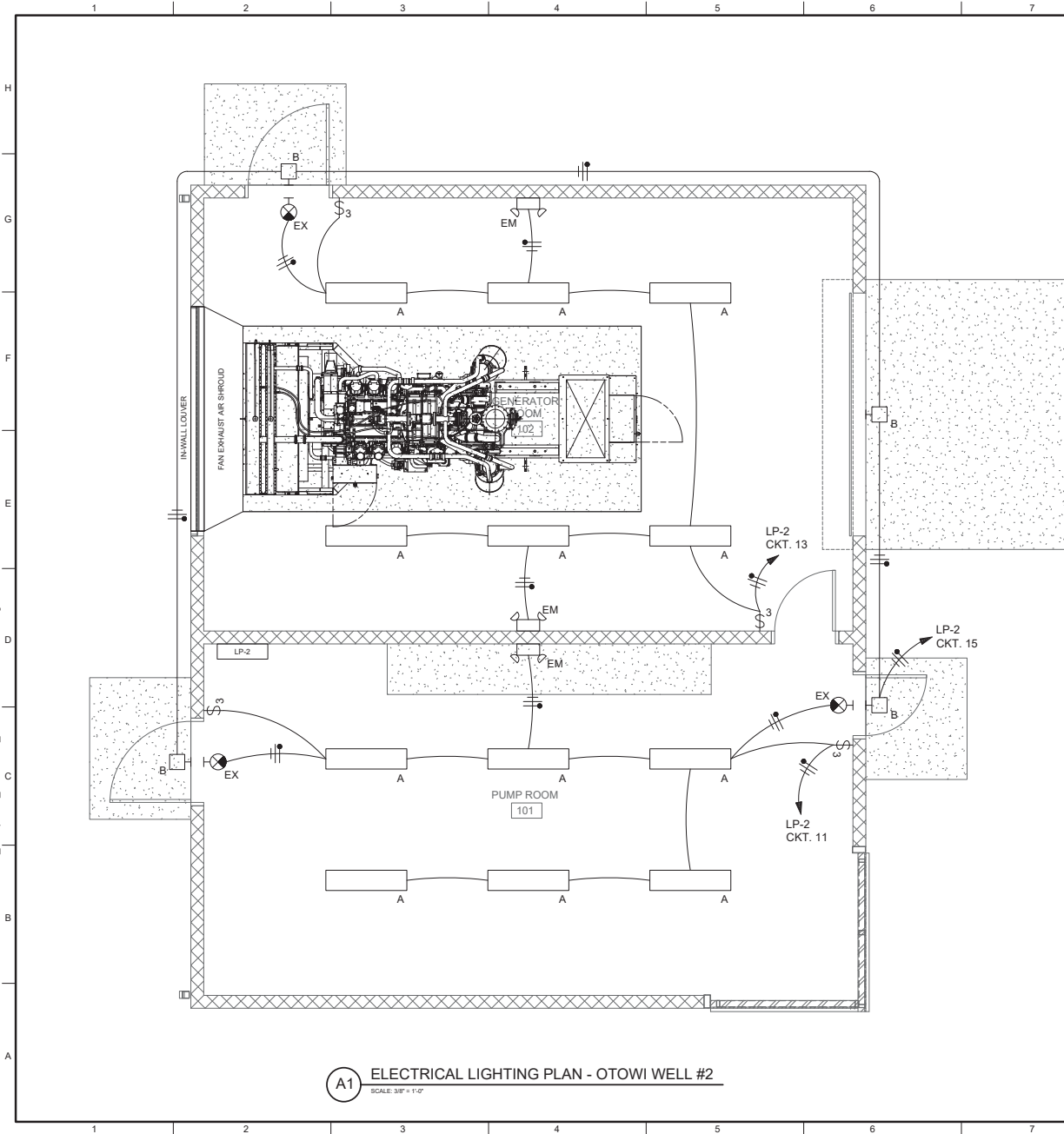
SHEET TITLE

ELECTRICAL  
POWER PLAN

SHEET NO:

E-101





**A1** ELECTRICAL LIGHTING PLAN - OTOWI WELL #2  
SCALE: 3/8" = 1'-0"

### GENERAL NOTES

- REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
- REFER TO ELECTRICAL FIXTURE SCHEDULE AND PANEL SCHEDULES FOR ADDITIONAL INFORMATION. REFER TO POWER PLANS FOR PANEL LOCATIONS.
- ALL LIGHTING FIXTURES SHOWN ARE TO BE CONFIRMED BY CONTRACTOR AS TO FINAL LOCATION BASED ON INSTALLED EQUIPMENT AND PIPING. IF ANY FIXTURES REQUIRE RELOCATION OR ANY ADDITIONAL FIXTURES ARE REQUIRED DUE TO FINAL INSTALLED CONSTRUCTION, CONTRACTOR SHALL INSTALL ALL WIRING AND FIXTURES AT NO ADDITIONAL COST TO OWNER. COORDINATE FINAL LIGHTING FIXTURE INSTALLATION WITH ALL DISCIPLINES TO AVOID ANY CONFLICTS PRIOR TO INSTALLATION. REFER TO ARCHITECTURAL DRAWINGS FOR ADDITIONAL INFORMATION.
- CONTRACTOR SHALL FIELD VERIFY PLACEMENT OF ALL EMERGENCY LIGHTING BASED ON FINAL INSTALLED EQUIPMENT AND PIPING LAYOUT.
- CONTRACTOR SHALL CONFIRM FINAL ELECTRICAL LOAD OF ALL BRANCH CIRCUITS BASED ON FINAL INSTALLATION INCLUDING ANY ADDED FIXTURES SO AS NOT TO OVERLOAD ANY BRANCH CIRCUIT PER NEC REQUIREMENTS. NOTIFY ENGINEER OF ANY DEVIATIONS FROM DRAWINGS.
- CONTRACTOR TO PROVIDE AS-BUILT DRAWINGS TO ENGINEER OF FINAL INSTALLATION AND OR DEVIATIONS FROM CITY OF ALBUQUERQUE DIVISION APPROVED DRAWINGS.

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CONSULTANTS



SEAL

**LAC OTOWI 2 WELL  
EQUIPMENT DESIGN**

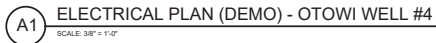
PROJECT NAME

REV.	DATE	DESCRIPTION	BY

PROJECT NO: 20-600-201-00  
DESIGNED BY: TLR  
DRAWN BY: TLR  
CHECKED BY: DG  
DATE: OCTOBER 2020

SHEET TITLE  
**ELECTRICAL  
LIGHTING PLAN**

SHEET NO:  
**E-102**



- A. REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION. REFER TO DEMO ELECTRICAL ONE-LINE DIAGRAMS FOR ADDITIONAL INFORMATION.
- B. CONTRACTOR SHALL FIELD VERIFY ALL EXISTING EQUIPMENT SIZING AND WIRING FOR ACCURACY. IF ANY DEVIATIONS ARE FOUND FROM INFORMATION ON ONE-LINE, CONTRACTOR SHALL NOTIFY ENGINEER PRIOR TO ANY WORK BEGINNING.
- C. ALL DEMOED WIRING SHALL BE RETURNED TO OWNER AFTER REMOVAL. CONTRACTOR SHALL COORDINATE WITH OWNER.
- D. CONTRACTOR SHALL COORDINATE WITH OWNER FOR REMOVAL OF EXISTING WIRING PRIOR TO DISCONNECTION OF ANY POWER.
- E. CONTRACTOR SHALL SEAL ALL DEMOED CONDUIT PENETRATIONS WITH CONDUIT SEAL.

1. MCC-401 AND ALL ASSOCIATED SECTIONS ARE TO BE REPLACED WITH NEW EQUIPMENT. CONTRACTOR SHALL REMOVE FROM SERVICE MCC-401 AND ALL ASSOCIATED SECTIONS. CONTRACTOR SHALL OBTAIN PERMITS FOR REMOVAL OF EQUIPMENT WITH OWNER AND ENGINEER PRIOR TO ANY WORK PERFORMED. ALL WIRING TO EXISTING EQUIPMENT IS TO BE REUSED. CONTRACTOR SHALL PROVIDE PROTECTION OF EXISTING EQUIPMENT AND WIRING TO REMAIN IN ACCORDANCE WITH NEC 2017 REQUIREMENTS. IF ANY WIRING IS FOUND TO BE NON-COMPLIANT, CONTRACTOR SHALL BRING IT TO THE ATTENTION OF THE ENGINEER PRIOR TO ANY WORK TO BEGIN.
2. WIRING TO WP4 AND DP-401 IS TO BE REUSED. CONTRACTOR SHALL INSPECT EXISTING WIRING FOR CONDITION AND REUSE. IF ANY WIRING IS FOUND TO BE DAMAGED OR IN POOR CONDITION, CONTRACTOR SHALL BRING IT TO THE ATTENTION OF THE OWNER AND ENGINEER PRIOR TO ANY WORK TO BEGIN. CONTRACTOR SHALL RE-TORQUE ALL CONNECTIONS AT PANEL ORIGINAL MANUFACTURER REQUIREMENTS.
3. EXISTING UTILITY TRANSFORMER IS TO BE REUSED. CONTRACTOR SHALL COMPLY WITH ALL PRESCRIPTIONS OF ALL TRANSFORMER SECONDARY CONDUCTORS WITH UTILITY PRIOR TO ANY WORK TO BEGIN. CONTRACTOR SHALL BRING TO THE ATTENTION OF THE ENGINEER AND OWNER PRIOR TO ANY WORK TO BEGIN. CONTRACTOR SHALL BRING TO DEMO AND NEW ONE-LINE DIAGRAM FOR ADDITIONAL REQUIREMENTS.

**WILSON  
& COMPANY**  
4401 MASTHEAD ST. NE SUITE 150

## CONSULTANTS



NAME  
LAC OTOWI 4 WELL  
EQUIPMENT DESIGN

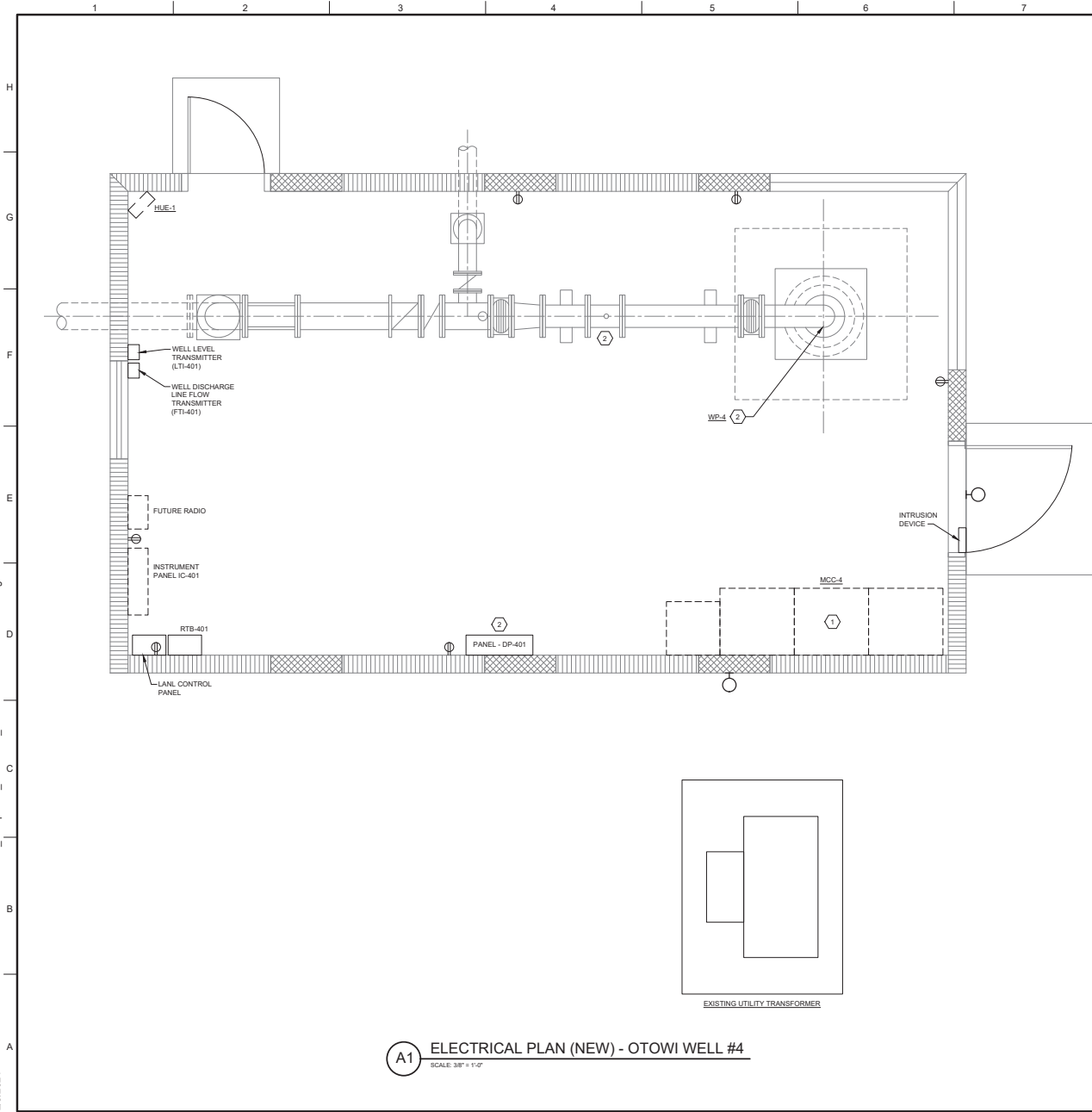
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PROJECT NO:	20-600-201-00
DESIGNED BY:	TLR
DRAWN BY:	TLR
CHECKED BY:	DG
DATE:	OCTOBER 2020

SHEET TITLE

ELECTRICAL  
PLAN (DEMO)

SHEET NO:  
**ED-104**



**A1** ELECTRICAL PLAN (NEW) - OTOWI WELL #4  
SCALE: 3/8" = 1'-0"

### GENERAL NOTES

- REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
- EQUIPMENT LOCATION IS DIAGRAMMATIC. FIELD COORDINATE WITH ALL DISCIPLINES FINAL EQUIPMENT LOCATION AND ADJUST WIRING AS NEEDED. IF ANY ADDITIONAL WIRING ADJUSTMENTS ARE MADE IN THE FIELD DUE TO EQUIPMENT RELOCATION, ADJUST WIRING AS NEEDED WITH NO ADDITIONAL COST TO THE OWNER.
- REFER TO ELECTRICAL ONE-LINE DIAGRAM AND PANEL SCHEDULES FOR ADDITIONAL INFORMATION.
- CONTRACTOR SHALL CONFIRM FINAL ELECTRICAL LOAD OF ALL BRANCH CIRCUITS BASED ON FINAL INSTALLATION INCLUDING ANY ADDED FIXTURES SO AS NOT TO OVERLOAD ANY BRANCH CIRCUIT PER NEC REQUIREMENTS. NOTIFY ENGINEER OF ANY DEVIATIONS FROM DRAWINGS.
- CONTRACTOR SHALL PROVIDE ALL EQUIPMENT WITH DISCONNECTING MEANS PER NEC REQUIREMENTS WITHIN CLOSE APPROXIMATION OF EQUIPMENT. ALL DISCONNECTING MEANS SHALL BE RATED FOR INTENDED INSTALLATION AND USE. DISCONNECTING MEANS MAY BE NON-FUSED IF BRANCH CIRCUIT IS PROTECTED WITH OCPD RATED FOR THE EQUIPMENT PER NEC REQUIREMENTS. OTHERWISE ALL DISCONNECTING MEANS SHALL BE INSTALLED WITH PROPERLY RATED FUSING PER FINAL EQUIPMENT SIZING PER NEC.
- CONTRACTOR TO PROVIDE AS-BUILT DRAWINGS TO ENGINEER OF FINAL INSTALLATION AND OR DEVIATIONS FROM NEW MEXICO CONSTRUCTION INDUSTRIES DIVISION APPROVED DRAWINGS.

### KEYNOTES

- MCC-MAIN IS NEW. CONTRACTOR SHALL REUSE ALL EXISTING WIRING AND RECONNECT TO NEW EQUIPMENT. CONTRACTOR SHALL FIELD VERIFY EXISTING CONDUCTOR LENGTH AND INSTALLATIONS FOR REUSE. CONTRACTOR SHALL EXTEND ALL WIRING TO NEW EQUIPMENT AS REQUIRED TO ENSURE PROPER OPERATION. IF ANY MEDIUM VOLTAGE WIRING IS DETERMINED TO BE INSUFFICIENT IN LENGTH, CONTRACTOR SHALL REPLACE IN ITS ENTIRETY. NO SPLICES TO MEDIUM VOLTAGE WIRING WILL BE ALLOWED. CONTRACTOR SHALL COORDINATE ALL WIRING FOR REINSTALLATION WITH ENGINEER PRIOR TO INSTALLATION.
- WIRING TO WP-4 AND DP-401 IS TO BE REUSED. CONTRACTOR SHALL INSPECT EXISTING WIRING FOR CONDITION AND REUSE. IF ANY WIRING IS FOUND TO BE DAMAGED OR IN POOR CONDITION, CONTRACTOR SHALL BRING IT TO THE ATTENTION OF THE OWNER AND ENGINEER PRIOR TO BEGINNING ANY WORK. CONTRACTOR SHALL RE-TORQUE ALL CONNECTIONS AT ALL EQUIPMENT PER ORIGINAL MANUFACTURE REQUIREMENTS. NO SPLICES TO MEDIUM VOLTAGE WIRING WILL BE ALLOWED.

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CONSULTANTS

PROJECT NAME

**LAC OTOWI 4 WELL  
EQUIPMENT DESIGN**

REV.	DATE	DESCRIPTION	BY

PROJECT NO: 20-600-201-00

DESIGNED BY: TLR

DRAWN BY: TLR

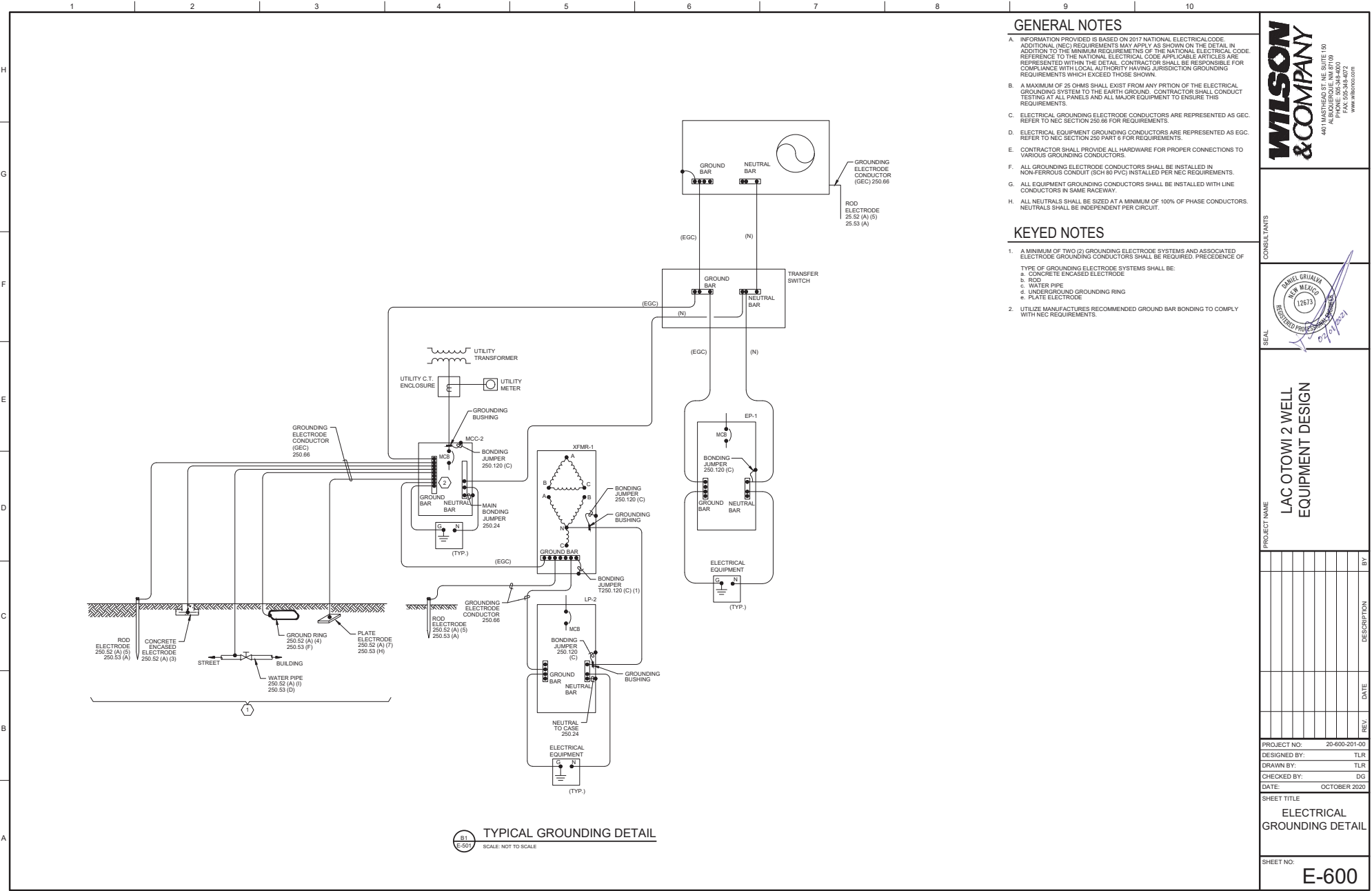
CHECKED BY: DG

DATE: OCTOBER 2020

ELECTRICAL  
PLAN (NEW)

SHEET NO:

**E-104**



## GENERAL NOTES

- INFORMATION PROVIDED IS BASED ON 2017 NATIONAL ELECTRICAL CODE. ADDITIONAL (NEC) REQUIREMENTS MAY APPLY AS SHOWN ON THE DETAIL IN ADDITION TO THE MINIMUM REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE. REFERENCE TO THE NATIONAL ELECTRICAL CODE APPLICABLE ARTICLES ARE REPRESENTED WITHIN THE DETAIL. CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLIANCE WITH LOCAL AUTHORITY HAVING JURISDICTION GROUNDING REQUIREMENTS WHICH EXCEED THOSE SHOWN.
- A MAXIMUM OF 25 OHMS SHALL EXIST FROM ANY PORTION OF THE ELECTRICAL GROUNDING SYSTEM TO THE EARTH GROUND. CONTRACTOR SHALL CONDUCT TESTING AT ALL PANELS AND ALL MAJOR EQUIPMENT TO ENSURE THIS REQUIREMENTS.
- ELECTRICAL GROUNDING ELECTRODE CONDUCTORS ARE REPRESENTED AS EGC. REFER TO NEC SECTION 250.66 FOR REQUIREMENTS.
- ELECTRICAL EQUIPMENT GROUNDING CONDUCTORS ARE REPRESENTED AS EGC. REFER TO NEC SECTION 250 PART 6 FOR REQUIREMENTS.
- CONTRACTOR SHALL PROVIDE ALL HARDWARE FOR PROPER CONNECTIONS TO VARIOUS GROUNDING CONDUCTORS.
- ALL GROUNDING ELECTRODE CONDUCTORS SHALL BE INSTALLED IN NON-FERROUS CONDUIT (SCH 80 PVC) INSTALLED PER NEC REQUIREMENTS.
- ALL EQUIPMENT GROUNDING CONDUCTORS SHALL BE INSTALLED WITH LINE CONDUCTORS IN SAME RACEWAY.
- ALL NEUTRALS SHALL BE SIZED AT A MINIMUM OF 100% OF PHASE CONDUCTORS. NEUTRALS SHALL BE INDEPENDENT PER CIRCUIT.

## KEYED NOTES

- A MINIMUM OF TWO (2) GROUNDING ELECTRODE SYSTEMS AND ASSOCIATED ELECTRICAL GROUNDING CONDUCTORS SHALL BE REQUIRED. PRECEDENCE OF TYPE OF GROUNDING ELECTRODE SYSTEMS SHALL BE:
  - CONCRETE ENCASED ELECTRODE
  - ROD
  - WATER PIPE
  - UNDERGROUND GROUNDING RING
  - PLATE ELECTRODE
- UTILIZE MANUFACTURER'S RECOMMENDED GROUND BAR BONDING TO COMPLY WITH NEC REQUIREMENTS.

CONSULTANTS

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PROJECT NAME

LAC OTOWI 2 WELL  
 EQUIPMENT DESIGN

REV.	DATE	DESCRIPTION	BY

PROJECT NO: 20-600-201-00

DESIGNED BY: TLR

DRAWN BY: TLR

CHECKED BY: DG

DATE: OCTOBER 2020

SHEET TITLE

ELECTRICAL  
GROUNDING DETAIL

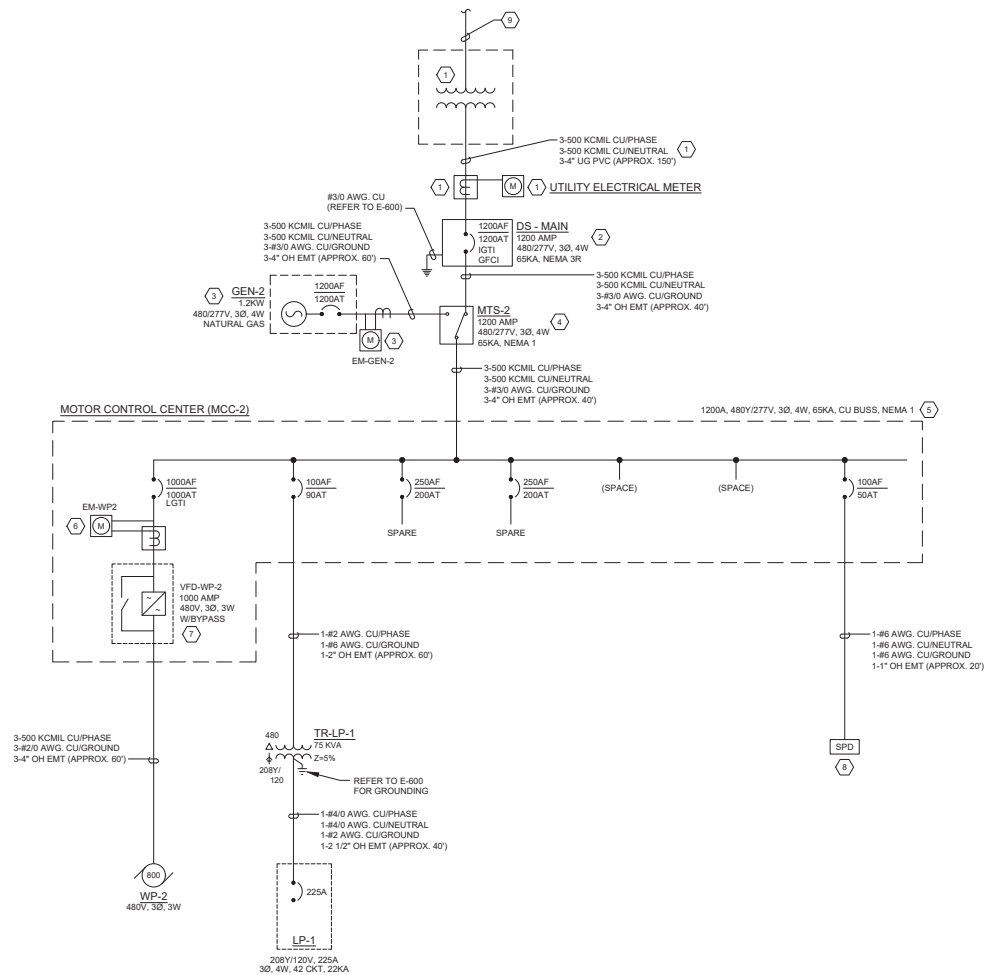
SHEET NO:

E-600



H  
G  
F  
E  
D  
C  
B  
A

1 2 3 4 5 6 7 8 9 10



ONE-LINE DIAGRAM

SCALE: NONE

## GENERAL NOTES

- REFER TO ELECTRICAL PANEL SCHEDULES AND SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS. REFER TO PLAN DRAWINGS FOR APPROXIMATE EQUIPMENT LOCATION.
- ALL OCPD, WIRE AND CONDUIT SIZING SHOWN IS BASED ON PRELIMINARY DESIGN INFORMATION. COORDINATE FINAL SIZING OF ALL EQUIPMENT OCPD, WIRE AND CONDUIT SIZING WITH ALL DISCIPLINES AND ADJUST TO FINAL FIELD EQUIPMENT OCPD SIZE PER MANUFACTURE RECOMMENDATIONS. IF ANY DEVIATIONS ARE DISCOVERED CONTRACTOR SHALL ADJUST OCPD, WIRE AND CONDUIT SIZING AS NEEDED PER NEC REQUIREMENTS WITHOUT ANY ADDITIONAL COST TO OWNER.
- ALL CONDUITS SHALL BE INSTALLED WITH PLASTIC BUSHINGS UNLESS OTHERWISE REQUIRED BY NEC.
- ALL WIRING SHALL BE THW COPPER WIRING UNLESS OTHERWISE NOTED. ALL WIRING AMPACITY IS BASED ON 75 DEG C PER NEC.
- MAXIMUM VOLTAGE DROP SHALL NOT EXCEED 5% FROM SERVICE TO END LOAD. MAXIMUM VOLTAGE DROP FOR ANY FEEDER OR BRANCH CIRCUITS SHALL NOT EXCEED 3%. IF FINAL INSTALLATION OF WIRING EXCEEDS ALLOWABLE VOLTAGE DROP REQUIREMENTS, CONTRACTOR SHALL INCREASE CONDUCTOR SIZE AND CONDUIT TO MEET NEC FILL REQUIREMENTS.
- PROVIDE ALL ARC FLASH LABELING AS REQUIRED BY NFPA 70E AND 70E FOR ALL EQUIPMENT.
- REFER TO PLAN DRAWINGS AND FOR EQUIPMENT LOCATION.
- CONTRACTOR SHALL PROVIDE AS-BUILT DRAWINGS TO ENGINEER AND OWNER AT COMPLETION OF PROJECT INSTALLATION.

## KEYNOTES

- CONTRACTOR SHALL INSTALL ALL WIRING AND SERVICE EQUIPMENT. ALL SERVICE EQUIPMENT SHALL BE PRE-APPROVED BY LOCAL UTILITY. FINAL CONNECTIONS SHALL BE MADE BY UTILITY. INSTALL NEW ELECTRICAL SERVICE PER NEC REQUIREMENTS. CONTRACTOR SHALL COORDINATE WITH LOCAL UTILITY FOR ALL WORK. CONTRACTOR SHALL INCLUDE ALL UTILITY FEES (INCLUDING COST OF TRANSFORMER) AS PART OF COST TO OWNER IN ORIGINAL BID. NO ADDITIONAL COST WILL BE INCURRED BY OWNER.
  - INSTALL SERVICE RATED ENCLOSED CIRCUIT BREAKER WITH GFCI PROTECTION PER NEC REQUIREMENTS. CONTRACTOR SHALL PERFORM AND PROVIDE ALL GFCI TESTING AS REQUIRED BY LOCAL AHJ.
  - PROVIDE 3/2\"/>
  - CONTRACTOR SHALL PROVIDE MTS WITH OVERLAPPING NEUTRALS. IT IS THE INTENTION TO ALLOW THE OWNER THE ABILITY TO PERFORM POWER TRANSFER AT THEIR DISCRETION. CONTRACTOR SHALL LABEL ALL EQUIPMENT TO CLEARLY IDENTIFY TO USER ALL POWER IS ROUTED THROUGH MTS. MTS SHALL BE INSTALLED WITH INDICATION LIGHTING AT BOTH INCOMING AND OUTGOING LINES TO CLEARLY DISPLAY POWER AT OUTPUT OF MTS.
  - INSTALL NEW MCC-2 WITH INTERNAL VFD AS SHOWN. CONTRACTOR SHALL VERIFY FINAL EQUIPMENT SIZING TO ENSURE PROPER CLEARANCES PER NEC REQUIREMENTS.
  - INSTALL DIGITAL MULTIMETER WITH A MINIMUM OF THE FOLLOWING FUNCTIONALITY:
    - CURRENT (PER PHASE)
    - VOLTAGE (PHASE-PHASE, PER PHASE)
    - KW (PEAK DEMAND, INSTANTANEOUS DEMAND)
    - KVA (PEAK DEMAND, INSTANTANEOUS DEMAND)
    - POWER FACTOR (PEAK, INSTANTANEOUS)
    - HARMONIC CONTENT (PER PHASE, NEUTRAL, GROUND, PHASE-PHASE)
    - FAULT ALARMS
- METER SHALL BE INTERCONNECTED TO SCADA SYSTEM TO RECORD AND MONITOR ALL FUNCTIONS. SCADA SHALL PROVIDE A MINIMUM OF 365 DAYS OF HISTOGRAM ON ALL DATA FOR OWNER REFERENCE. ALL DATA IS TO BE TIME STAMPED. ALL FUNCTIONS SHALL BE ACCESSIBLE AT METER FACE AS WELL AS BY SCADA. METERS SHALL BE PROVIDED BY SWITCHGEAR FACTORY MANUFACTURE WITH ALL PTT/CT'S PROPERLY SIZED FOR LOCATION INDICATED. ALL METERS SHALL BE PLACED ON LOAD SIDE OF BREAKER. REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
- PROVIDE VFD WITH BY-PASS INCLUDING ALL OCPD AS REFERENCED INTEGRAL TO MCC-2. CONTRACTOR SHALL VERIFY FINAL SIZING OF VFD WITH FINAL SIZING OF WP-2. CONTRACTOR SHALL ALSO FIELD VERIFY PROPER TERMINATIONS AT BOTH VFD LOAD SIDE AND MOTOR TO ACCOMMODATE FEEDER CABLE SIZE A QUANTITY.
  - INSTALL EXTERNAL MOUNTED SPD TO MCC-2. REFER TO SPECIFICATIONS FOR REQUIREMENTS.
  - CONTRACTOR TO INSTALL ALL CONDUIT AND WIRING FROM PRIMARY TO TRANSFORMER TO UTILITY POLE LINE PER LOCAL UTILITY CONSTRUCTION INSTALLATION STANDARDS. CONTRACTOR SHALL COORDINATE ALL WORK AND ROUTING WITH LOCAL UTILITY AND OWNER. CONTRACTOR SHALL PROVIDE FINAL ROUTING AND PROPOSED INSTALLATION TO ENGINEER FOR PRIOR APPROVAL PRIOR TO ANY WORK TO BEGIN.

CONSULTANTS

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SEAL

PROJECT NAME

**LAC OTOWI 2 WELL  
EQUIPMENT DESIGN**

REV.	DATE	DESCRIPTION	BY

PROJECT NO: 20-600-201-00

DESIGNED BY: TLR

DRAWN BY: TLR

CHECKED BY: DG

DATE: OCTOBER 2020

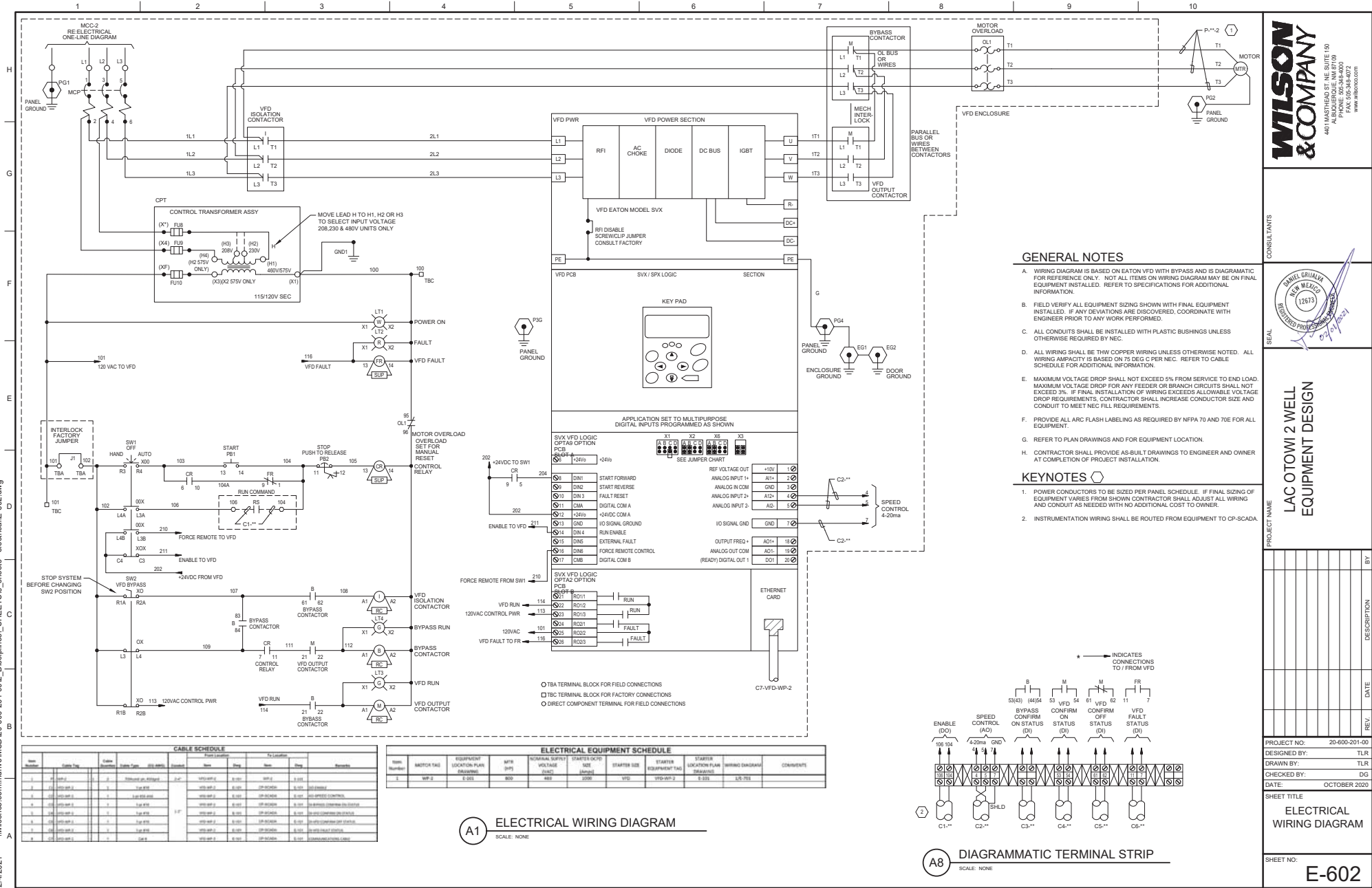
SHEET TITLE

ELECTRICAL  
ONE-LINE DIAGRAM

SHEET NO:

E-601

1 2 3 4 5 6 7 8 9 10





SCALE: NONE

A. REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION. REFER TO DEMO ELECTRICAL PLANS FOR ADDITIONAL INFORMATION.

- ## KEYNOTES

1. EXISTING UTILITY TRANSFORMER IS TO BE REUSED. CONTRACTOR SHALL COORDINATE DISCONNECTION OF ALL TRANSFORMER SECONDARY CONDUCTORS WITH UTILITY PRIOR TO ANY WORK TO BEGIN. CONTRACTOR SHALL INQUIRE OF UTILITY FOR ANY SPECIAL CONCERNS FOR CONDITION AND REUSE. IF ANY DAMAGE TO CONDUCTORS ARE DISCOVERED, CONTRACTOR SHALL BRING IT TO THE ATTENTION OF THE ENGINEER. UTILITY PRIOR TO ANY WORK TO BEGIN. CONTRACTOR SHALL REFER TO NEW ONE-LINE DIAGRAM FOR ADDITIONAL REQUIREMENTS.
2. WIRING TO WP-4 AND DP-401 IS TO BE REUSED. CONTRACTOR SHALL INSPECT EXISTING WIRING FOR CONDITION AND REUSE. IF ANY WIRING IS FOUND TO BE DAMAGED OR IN NEED OF REPAIR, CONTRACTOR SHALL BRING IT TO THE ATTENTION OF OWNER AND ENGINEER PRIOR TO ANY WORK TO BEGIN. CONTRACTOR SHALL RE-REQUIRED ALL CONNECTION AT PANEL PER ORIGINAL MANUFACTURE REQUIREMENTS.
3. CONTRACTOR SHALL DEMO EXISTING ELECTRICAL EQUIPMENT AND REMOVE ALL NEW EQUIPMENT. CONTRACTOR SHALL RETURN TO OWNER ALL EQUIPMENT AND WIRING.

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CONSULTANTS

SEAL

PROJECT NAME

LAC OTOWI 4 WELL  
EQUIPMENT DESIGN

[illegible]

PROJECT NO:	20-600-201-00
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DESIGNED BY:	TLR
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DRAWN BY:	TLR
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CHECKED BY:	DG
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DATE: OCTOBER 2020

SHEET TITLE

ELECTRICAL

### ONE-LINE DIAGRAM -

### ONE-LINE DIAGRAM - DEMO

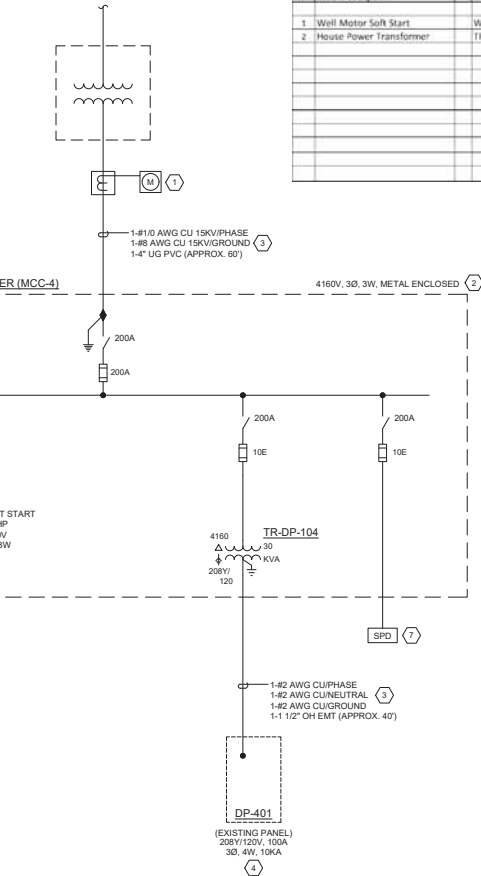
DEMO

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SHEET NO: **FD-001**

ED-604

11 of 11



SCALE: NONE

Project Name:		Otowi #4 Well	
Project Number:		20-600-201-00	
Service Panel Name:		MCC-Main	
Service L-L Voltage:		4160.00	V
Service L-N Voltage:			V
Service Phase:		3	PH
Service Wire:		3	W

Item	Load Description	Equipment Tag	Connected Load		Demand Factor *	Demand Load		Units
			KVA/HP	Amps		KVA/HP	Amps	
1	Well Motor Soft Start	WP-6	700.00	97.27	1.25	875.00	121.58	
2	House Power Transformer	TR-OP-401	30.00	4.17	1.25	37.50	5.21	
							0.00	
							0.00	
							0.00	
							0.00	
		Sub-Total KVA			@	4160.00 V	912.50	126.79
		Source Capacity			@		0	0.00
		Recommended KVA			@	4160.00 V	912.50	126.79
		Recommended Service Size			@	4160.00 V	200	200 A

- A. REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS. REFER TO PLAN DRAWINGS FOR APPROXIMATE EQUIPMENT LOCATION.
- B. LL CPD, WIRE AND CONDUIT SIZING SHOWN IS BASED ON PRELIMINARY DESIGN INFORMATION. COORDINATE FINAL SIZING OF ALL EQUIPMENT CPD, WIRE AND CONDUIT SIZING TO THE FINAL DESIGN AND ADJUST TO FINAL FIELD EQUIPMENT CPD SIZE PER MANUFACTURER RECOMMENDATIONS. IF ANY DEVIATIONS ARE DISCOVERED CONTRACTOR SHALL CALL THE CPD, WIRE AND CONDUIT SIZING ENGINEER PER NEC REQUIREMENTS WITHOUT ANY ADDITIONAL COST TO OWNER.
- C. ALL 15KV CABLES SHALL BE INSTALLED WITH STRESS CONNECTIONS PER IEEE RECOMMENDATIONS. ALL 15KV TERMINATIONS TO NEW EQUIPMENT SHALL BE INSTALLED PER EQUIPMENT MANUFACTURER RECOMMENDATIONS. ALL CONDUITS SHALL BE INSTALLED WITH PLASTIC BUSHINGS UNLESS OTHERWISE REQUIRED BY NEC.
- D. ALL WIRING SHALL BE THW COPPER WIRING UNLESS OTHERWISE NOTED. ALL WIRING AMPACITY IS BASED ON 75 DEG C PER NEC.
- E. PROVIDE ALL CASH LABELING AS REQUIRED BY NFPA 70 AND 70E FOR ALL EQUIPMENT.
- F. REFER TO PLAN DRAWINGS AND FOR EQUIPMENT LOCATION.
- G. CONTRACTOR SHALL PROVIDE AS-BUILT DRAWINGS TO ENGINEER AND OWNER AT COMPLETION OF PROJECT INSTALLATION.

1. CONTRACTOR SHALL INSTALL ALL WIRING AND SERVICE EQUIPMENT. ALL SERVICE EQUIPMENT SHALL BE PRE-APPROVED BY LOCAL UTILITY. FINAL CONNECTIONS SHALL BE MADE BY UTILITY. INSTALL NEW ELECTRICAL SERVICE AND NEW RECONNECTING EQUIPMENT TO BE COORDINATE WITH LOCAL UTILITY FOR ALL WORK. CONTRACTOR SHALL INCLUDE ALL UTILITY FEES AS PART OF COST TO OWNER IN ORIGINAL BID. NO ADDITIONAL COST WILL BE INCURRED BY OWNER.
2. INSTALL SVC EQUIPMENT AS REFERENCED. IT IS THE INTENT OF THE OWNER TO REPLACE IN-KIND EXISTING SVC EQUIPMENT WITH NEW EQUIPMENT. CONTRACTOR SHALL INSTALL NEW EQUIPMENT PER NEC, NEC 240 AND IEEE REQUIREMENTS. THE SIZE AND LOCATION OF EQUIPMENT SHALL BE FIELD VERIFIED BY CONTRACTOR BASED ON FINAL APPROVED EQUIPMENT SPECIFICATIONS BY ENGINEER. IF ANY EXISTING EQUIPMENT IS REQUIRED TO BE REPLACED, CONTRACTOR SHALL RELOCATE WITH ADDITIONAL COST TO OWNER. CONTRACTOR SHALL FIELD VERIFY ALL EXISTING INSTALLATIONS PRIOR TO SUBMITTING NEW EQUIPMENT SPECIFICATIONS TO ENSURE NEW EQUIPMENT WILL FIT IN EXISTING SPACES.
3. IT IS THE INTENT OF THE ENGINEER TO REUSE EXISTING WIRING AND RECONNECT TO NEW EQUIPMENT AS REFERENCED. CONTRACTOR SHALL FIELD VERIFY ALL EXISTING WIRING AND RECONNECT TO NEW WIRING FOR INSTALLATION PER NEC 2017 REQUIREMENTS. IF ANY INSTALLATIONS ARE FOUND TO BE AGAINT NEC 2017 CURRENT UTILITY REQUIREMENTS, CONTRACTOR SHALL BRING IT TO THE ATTENTION OF OWNER, ENGINEER AND UTILITY PRIOR TO ANY WORK TO BEGIN.
4. CONTRACTOR SHALL RECONNECT EXISTING EQUIPMENT TO NEW SERVICE EQUIPMENT AS REFERENCED. CONTRACTOR SHALL RE-TORQUE ALL EQUIPMENT CONNECTIONS AND INSPECT ALL EXISTING WIRING FOR CONDITION AND INSTALLATION PER NEC 2017 REQUIREMENTS
5. INSTALL NEW SERVICE GROUNDING PER NEC 2017.
6. INSTALL DIGITAL MULTIMETER WITH A MINIMUM OF THE FOLLOWING FUNCTIONALITY:
  - A. CURRENT (PER PHASE)
  - B. VOLTAGE (PHASE-PHASE, PER PHASE)
  - C. KW (PEAK DEMAND, INSTANTANEOUS DEMAND)
  - D. KVAH (PEAK DEMAND, INSTANTANEOUS DEMAND)
  - E. POWER FACTOR (PER PHASE, PER LINE)
  - F. HARMONIC CONTENT (PER PHASE, NEUTRAL, GROUND)
  - G. PHASE-PHASE)
  - G. FAULT ALARMS

METER SHALL BE INTERCONNECTED TO SCADA SYSTEM TO RECORD AND MONITOR ALL FUNCTIONS. SCADA SHALL PROVIDE A MINIMUM OF 365 DAYS OF HISTOGRAM ON ALL DATA FOR OWNER REFERENCE. ALL DATA IS TO BE TIME STAMPED. ALL FUNCTIONS SHALL BE ACCESSABLE AT METER AS WELL AS BY SCADA. METER SHALL BE PROVIDED BY SWITCHGEAR FACTORY MANUFACTURE WITH ALL PTTSCT'S PROPERLY SIZED FOR LOCATION INDICATED. ALL METERS SHALL BE PLACED ON LOAD SIDE OF BREAKER. REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.

7. INSTALL EXTERNAL MOUNTED SPD TO MCC-MAN. REFER TO SPECIFICATIONS FOR REQUIREMENTS.

METER SHALL BE INTERCONNECTED TO SCADA SYSTEM TO RECORD AND MONITOR ALL FUNCTIONS. SCADA SHALL PROVIDE A MINIMUM OF 365 DAYS OF HISTOGRAM ON ALL DATA FOR OWNER REFERENCE. ALL DATA IS TO BE TIME STAMPED. ALL FUNCTIONS SHALL BE ACCESSIBLE AT METER FACE AS WELL AS BY SCADA. METERS SHALL BE PROVIDED BY SWITCHGEAR FACTORY MANUFACTURE WITH ALL PT'S/C'T'S PROPERLY SIZED FOR LOCATION INDICATED. ALL METERS SHALL BE PLACED ON LOAD SIDE OF BREAKER. REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.

7. INSTALL EXTERNAL MOUNTED SPD TO MCC-MAIN. REFER TO SPECIFICATIONS FOR REQUIREMENTS.

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CONSULTANTS

SEAN

PROJECT NAME

LAC OTOWI 4 WELL  
EQUIPMENT DESIGN

[illegible]

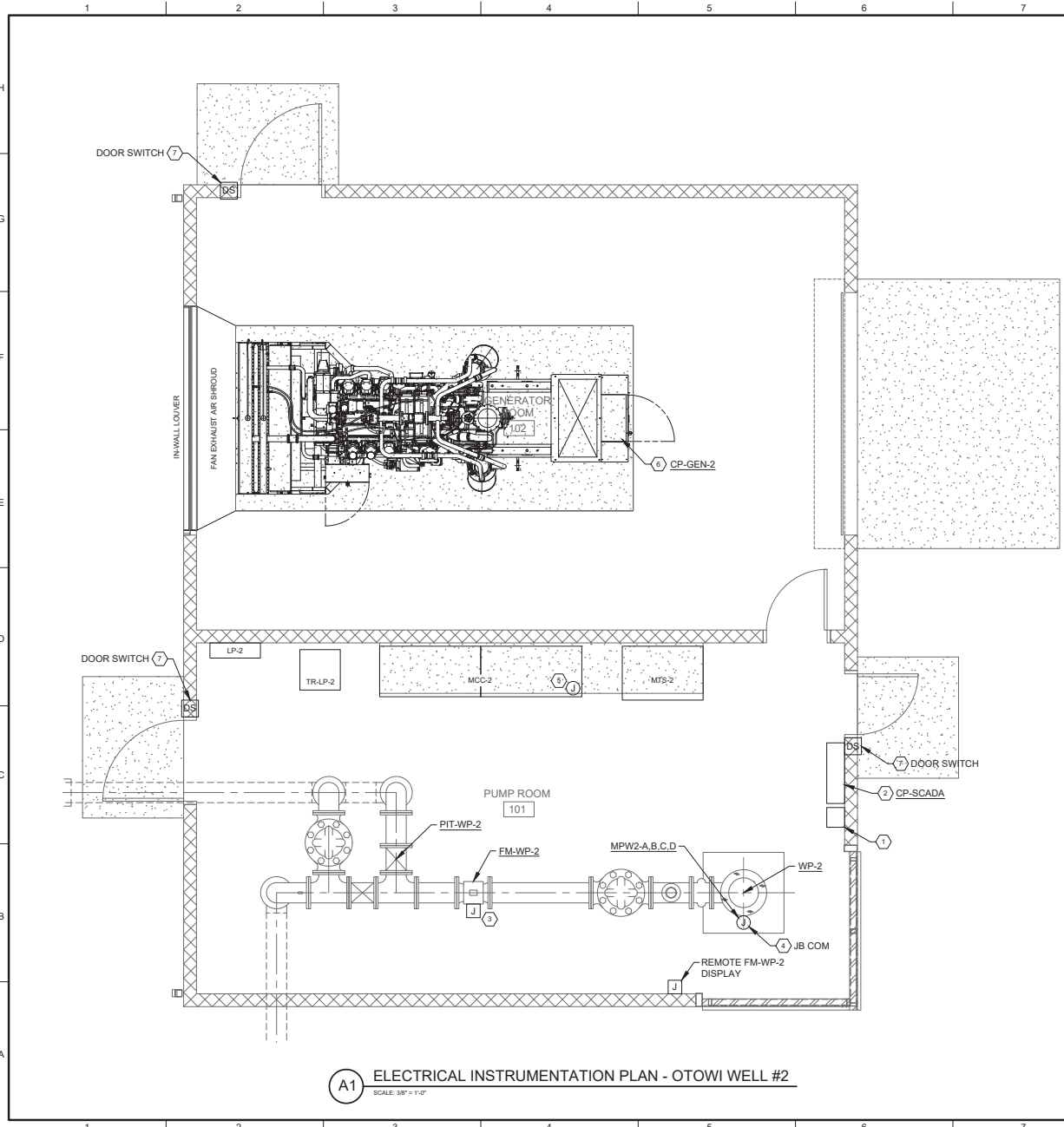
PROJECT NO:	20-600-201-00
DESIGNED BY:	TLR
DRAWN BY:	TLR
CHECKED BY:	DG
DATE:	OCTOBER 2020

SHEET TITLE

ELECTRICAL  
ONE-LINE DIAGRAM

SHEET NO: E-604





**A1** ELECTRICAL INSTRUMENTATION PLAN - OTOWI WELL #2  
SCALE: 3/8" = 1'-0"

### GENERAL NOTES

- EQUIPMENT LOCATION IS DIAGRAMMATIC. FIELD COORDINATE FINAL EQUIPMENT LOCATION AND ADJUST WIRING AS NEEDED. IF ANY ADDITIONAL WIRING ADJUSTMENTS ARE MADE IN THE FIELD DUE TO EQUIPMENT RELOCATION, ADJUST WIRING AS NEEDED.
- REFER TO INSTRUMENT SCHEDULE, INSTRUMENT I/O SCHEDULE AND INSTRUMENT CABLE SCHEDULE FOR ADDITIONAL INFORMATION.
- ALL SCADA PROGRAMMING TO BE DONE BY OWNER PREFERRED SCADA CONTRACTOR. CONTRACTOR SHALL SUB-CONTACT ALL SCADA WORK TO OWNER PREFERRED SCADA SUB-CONTRACTOR.
- REFER TO ALL DISCIPLINE DRAWINGS FOR ADDITIONAL INFORMATION.
- CONTRACTOR TO PROVIDE AS-BUILT DRAWINGS TO ENGINEER OF FINAL INSTALLATION AND OR DEVIATIONS FROM NEW MEXICO CONSTRUCTION INDUSTRIES DIVISION APPROVED DRAWINGS.

### KEYNOTES

- INSTALL 24"x24"x10" NEMA 1 JUNCTION BOX. ROUTE 1-2" EMT CONDUIT FROM JUNCTION BOX TO CP-SCADA. ROUTE 1-2" CONDUIT FROM JUNCTION BOX TO ROOFTOP SCADA RADIO ANTENNA. REFER TO INSTALLATION DETAIL FOR ADDITIONAL INFORMATION. CONTRACTOR TO COORDINATE WITH 3RD PARTY SCADA CONTRACTOR FOR ALL RADIO WIRING. CONTRACTOR SHALL INCLUDE ALL WIRING AND EQUIPMENT AS PART OF THE CONTRACTORS ORIGINAL INSTALLATION FEE WITH NO ADDITIONAL COSTS TO OWNER.
- CONTROL PANEL CP-SCADA IS TO BE PROVIDED BY CONTRACTOR VIA THE SCADA SUBCONTRACTOR. ELECTRICAL CONTRACTOR SHALL ROUTE ALL CONDUIT AND WIRING AS NEEDED FROM CONTROL PANEL TO ALL INSTRUMENTATION. ELECTRICAL CONTRACTOR SHALL LABEL ALL WIRING AT BOTH ENDS PER SPECIFICATION. ALL TERMINATIONS SHALL BE MADE BY SCADA SUBCONTRACTOR.
- INSTALL JUNCTION BOX AND WIRING FOR FLOW METER CONTROL WIRING. REFER TO INSTALLATION DETAIL FOR ADDITIONAL INFORMATION. INSTALL WIRING FROM FLOW METER TO CP-SCADA.
- INSTALL JUNCTION BOX AND WIRING FOR MOTOR BEARING RTD INSTRUMENTATION. COORDINATE INSTALLATION WITH EQUIPMENT MANUFACTURE. INSTALL WIRING TO CP-SCADA.
- VFD-WP-1 TO BE PROVIDED AND INSTALLED BY ELECTRICAL CONTRACTOR. REFER TO WIRING DIAGRAM 1/ E-602 FOR ADDITIONAL INFORMATION. INSTALL WIRING FROM ELECTRICAL METERS IN MCC-2 TO CP-SCADA. REFER TO ONE-LINE DIAGRAM FOR I/O TO BE SENT TO SCADA.
- INSTALL CONTROL WIRING FROM CP-GEN TO CP-SCADA FOR MONITORING OF GENERATOR SIGNALS. REFER TO ELECTRICAL ONE-LINE DIAGRAM FOR ALL I/O POINTS TO BE TRANSFERRED TO SCADA.
- CONTRACTOR TO INSTALL DOOR SWITCH INTEGRAL TO DOOR FRAME AND ROUTE WIRING TO CP-SCADA. COORDINATE WITH DOOR INSTALLER FOR ALL WIRING.

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02/01/2021

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02/01/2021

PROJECT NAME

LAC OTOWI 2 WELL  
EQUIPMENT DESIGN

REV.	DATE	DESCRIPTION	BY

PROJECT NO: 20-600-201-00

DESIGNED BY: TLR

DRAWN BY: TLR

CHECKED BY: DG

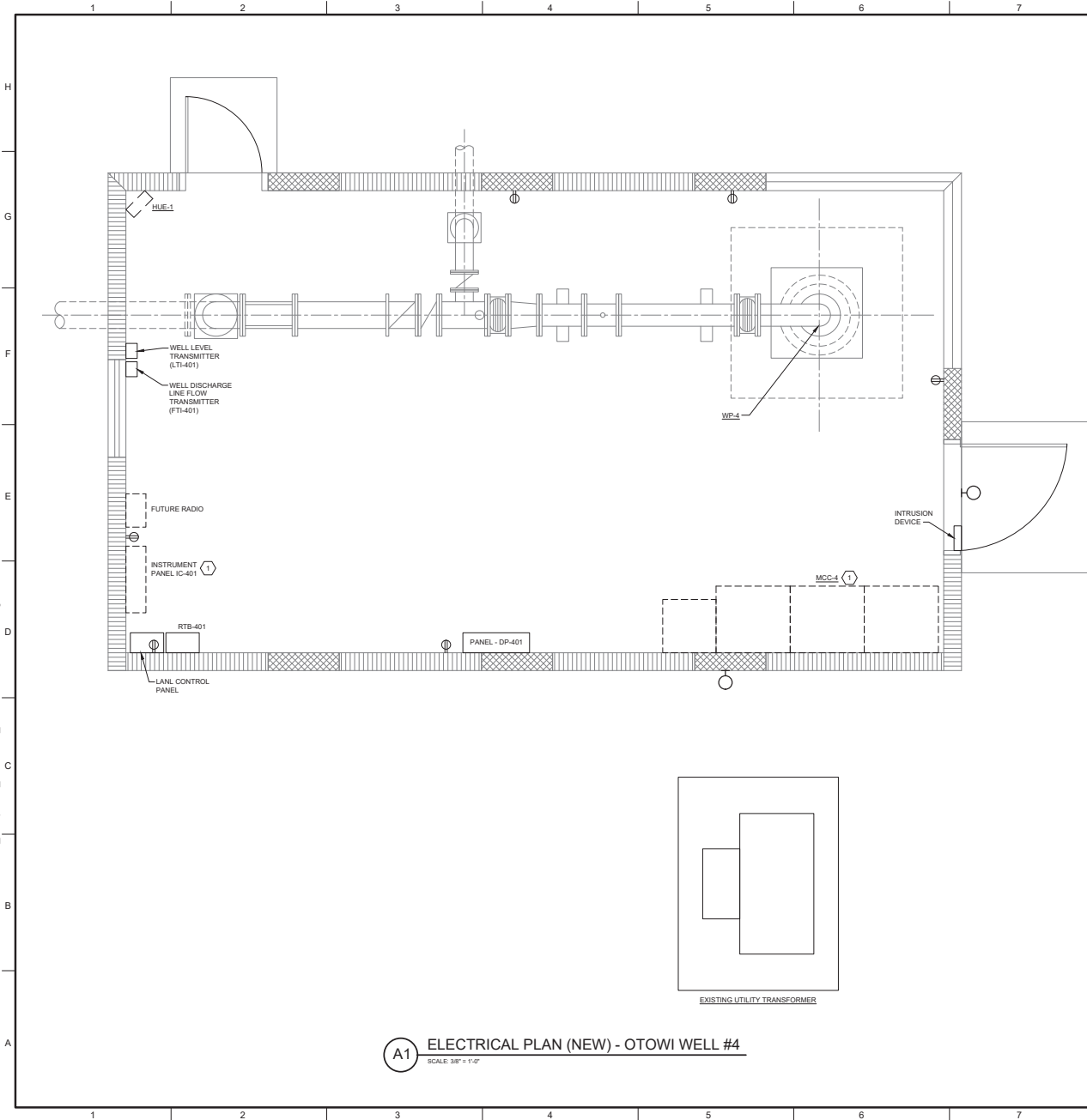
DATE: OCTOBER 2020

SHEET TITLE

ELECTRICAL INSTRUMENTATION PLAN

SHEET NO:

I-101



**A1** ELECTRICAL PLAN (NEW) - OTOWI WELL #4  
SCALE: 3/8" = 1'-0"

### GENERAL NOTES

- EQUIPMENT LOCATION IS DIAGRAMMATIC. FIELD COORDINATE FINAL EQUIPMENT LOCATION AND ADJUST WIRING AS NEEDED. IF ANY ADDITIONAL WIRING ADJUSTMENTS ARE MADE IN THE FIELD DUE TO EQUIPMENT RELOCATION, ADJUST WIRING AS NEEDED.
- REFER TO INSTRUMENT SCHEDULE, INSTRUMENT IO SCHEDULE AND INSTRUMENT CABLE SCHEDULE FOR ADDITIONAL INFORMATION.
- REFER TO ALL DISCIPLINE DRAWINGS FOR ADDITIONAL INFORMATION.
- ALL SCADA PROGRAMMING TO BE DONE BY OWNER PREFERRED SCADA CONTRACTOR. CONTRACTOR SHALL SUB-CONTACT ALL SCADA WORK TO OWNER PREFERRED SCADA SUB-CONTRACTOR.
- CONTRACTOR TO PROVIDE AS-BUILT DRAWINGS TO ENGINEER OF FINAL INSTALLATION AND OR DEVIATIONS FROM NEW MEXICO CONSTRUCTION INDUSTRIES DIVISION APPROVED DRAWINGS.

### KEYNOTES

- EXISTING CONTROL PANEL IS TO BE REUSED FOR NEW WIRING FROM NEW WP-4 SOFTSTART. ELECTRICAL CONTRACTOR SHALL ROUTE ALL CONDUIT AND WIRING AS NEEDED FROM CONTROL PANEL TO WP-4 SOFTSTART. ELECTRICAL CONTRACTOR SHALL LABEL ALL WIRING AT BOTH ENDS PER SPECIFICATION. ALL TERMINATIONS SHALL BE MADE BY SCADA SUBCONTRACTOR. ALL PROGRAMMING OF SCADA POINTS TO BE DONE BY THIRD PARTY SUB-CONTRACTOR.

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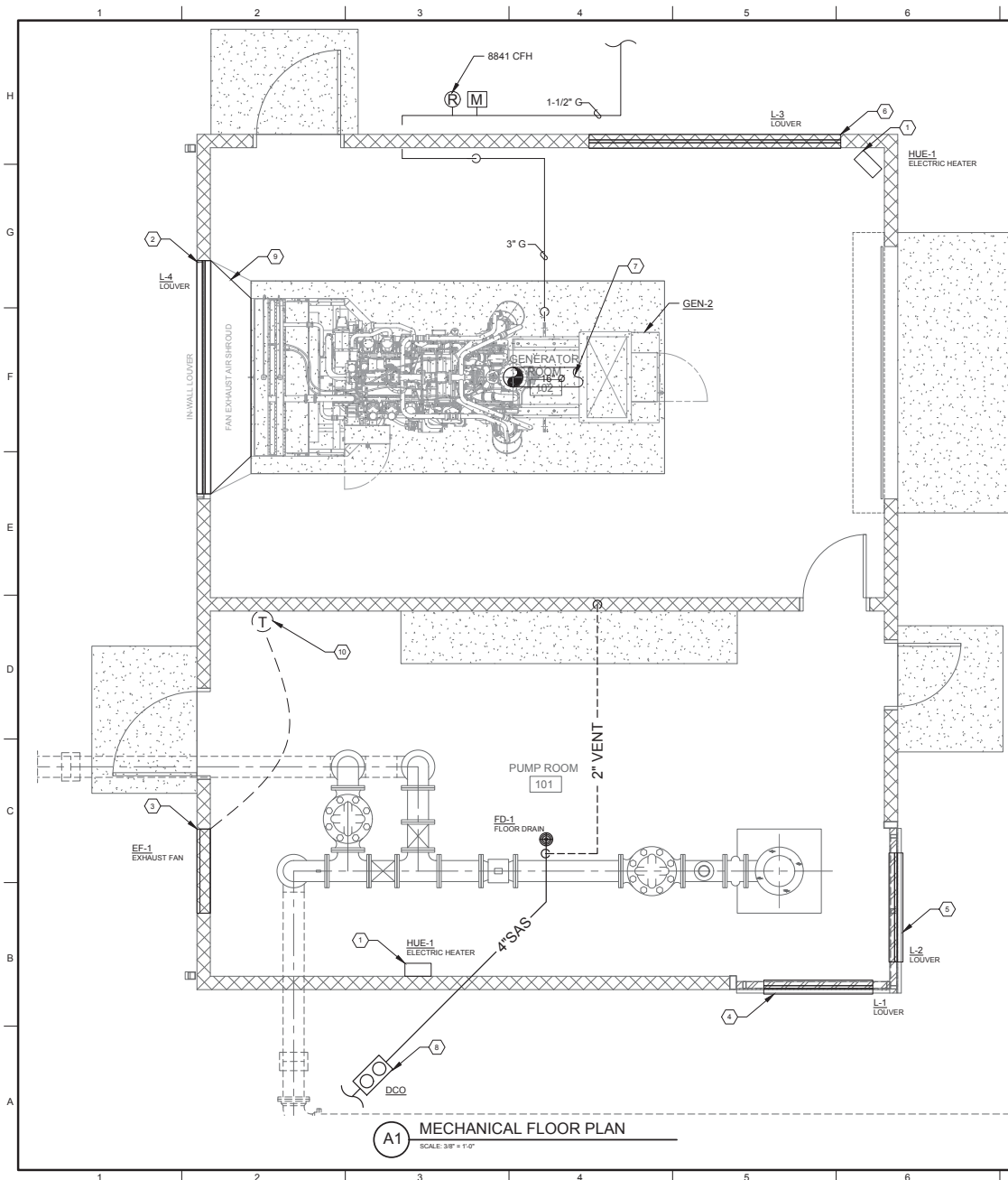
PROJECT NAME  
**LAC OTOWI 4 WELL  
EQUIPMENT DESIGN**

REV.	DATE	DESCRIPTION	BY

PROJECT NO: 20-600-201-00  
DESIGNED BY: TLR  
DRAWN BY: TLR  
CHECKED BY: DG  
DATE: OCTOBER 2020

SHEET TITLE  
**ELECTRICAL  
PLAN (NEW)**

SHEET NO:  
**I-104**



A1 MECHANICAL FLOOR PLAN  
SCALE: 3/8" = 1'-0"

### GENERAL NOTES

- CONTRACTOR TO PROVIDE AS-BUILT DRAWINGS TO ENGINEER OF FINAL INSTALLATION AND OR DEVIATIONS FROM NEW MEXICO CONSTRUCTION INDUSTRIES DIVISION APPROVED DRAWINGS.
- SEE SCHEDULE ON THIS SHEET FOR MECHANICAL EQUIPMENT.
- CONTRACTOR TO VERIFY AND COORDINATE W/ ELECTRICAL ENGINEER AND CONTRACTOR FOR WIRING AND POWER REQUIRED.
- CONTRACTOR TO VERIFY AND COORDINATE STRUCTURAL SUPPORT AND OPENINGS IN FLOOR, ROOF, AND WALLS.
- CONTRACTOR TO COORDINATE WITH MECHANICAL ENGINEER ON ANY OBSTRUCTIONS OR CONFLICTS REGARDING THE PROPOSED MECHANICAL LAYOUT.
- CONTRACTOR TO ENSURE MECHANICAL UNITS INSTALLED, ARE INSTALLED WITH PROPER MAINTENANCE ACCESS.

### KEYNOTES

- INSTALL NEW ELECTRIC HEATER HUE-1 MOUNT BOTTOM OF UNIT 6'-0" A.F.F.
- INSTALL IN-WALL LOUVER L-4.
- INSTALL EXHAUST FAN EF-1 MOUNT BOTTOM OF UNIT 10'-0" A.F.F.
- INSTALL IN-WALL LOUVER L-1, PROVIDE WITH GRAVITY BACKDRAFT DAMPER.
- INSTALL IN-WALL LOUVER L-2, PROVIDE WITH GRAVITY BACKDRAFT DAMPER.
- INSTALL IN-WALL LOUVER L-3, PROVIDE WITH GRAVITY BACKDRAFT DAMPER.
- INSTALL EXHAUST DUCT FROM UNIT WITH MUFFLER AND EXHAUST THIMBLE, SEE DETAIL C2501.
- INSTALL DOUBLE CLEAN OUT 5'-0" AWAY FROM BUILDING.
- INSTALL 83.75" W X 78" H TO 108" W X 96" H GALVANIZED STEEL TRANSITION FROM RADIATOR TO IN-WALL LOUVER.
- 24V DIGITAL THERMOSTAT TO INTERFACE WITH EXHAUST FAN VARIGREEN MOTOR CONTROL. PROVIDE WITH 24/120V TRANSFORMER AS REQUIRED.

### EXHAUST FAN SCHEDULE

MARK	MANUFACTURER / MODEL NO.	SERVICE	AREA SERVED	TYPE	CFM	ESP (IN WC)	DRIVE	SONES (MAA)	ELECTRICAL			REMARKS
									VOLT	PH	AMPS	
EF-1	GREENHECK / AER-E30C-620-VG	EXHAUST	PUMP ROOM 101	SIDE WALL MOUNTED	11600	0.52	DIRECT	36	460	3	7.6	A,B,C,D,E

#### REMARKS:

- MOUNT FAN PER MANUFACTURER'S RECOMMENDATIONS.
- PROVIDE WITH BACKDRAFT DAMPER.
- PROVIDE WITH WALL HOUSING.
- PROVIDE WITH 45 DEG WEATHERHOOD.
- PROVIDE WITH SPEED CONTROLLER.

### UNIT HEATER SCHEDULE (ELECTRICAL)

MARK	MANUFACTURER / MODEL #	AREA SERVED	CFM	WEIGHT LBS.	ELECTRICAL			OUTPUT (KW)	REMARKS
					VOLT	PH	FLA		
HUE-1	MODINE / HER 50	PUMP ROOM 101	380	34	208	3	13.82	5 KW	A,B,C,D
HUE-1	MODINE / HER 50	GENERATOR ROOM 102	380	34	208	3	13.82	5 KW	A,B,C,E

#### REMARK NOTES:

- INSTALL FAN PER MANUFACTURER'S REQUIREMENTS.
- COORDINATE MOUNTING HEIGHT PER MANUFACTURER.
- PROVIDE WITH UNIT MOUNTED THERMOSTAT.
- PROVIDE WITH PIPE SUSPENSION ADAPTER KIT.
- PROVIDE WITH WALL MOUNTING BRACKET.

### LOUVER SCHEDULE

MARK	MANUFACTURER / MODEL #	TYPE	LOCATION	SIZE (WxH)	P.D. (IN. W.C.)	MINIMUM FREE AREA (SQ.FT.)	MAX AIRFLOW (CFM)	REMARKS
L-1	GREENHECK / SED-501-44X44	INTAKE	PUMP ROOM 101	44x44	0.21	7.5	5,800	A,B,C,D
L-2	GREENHECK / SED-501-44X44	INTAKE	PUMP ROOM 101	44x44	0.21	7.5	5,800	A,B,C,D
L-3	GREENHECK / ESD-635-144X144	INTAKE	GENERATOR ROOM 102	144x144	0.069	85.5	64,625	A,B,C,D
L-4	GREENHECK / ESD-635-112X96	EXHAUST	GENERATOR ROOM 102	112x96	0.241	48.2	64,625	A,B,C,D

#### REMARK NOTES:

- ARCHITECT TO SPECIFY COLOR.
- CONTRACTOR SHALL VERIFY DEPTH OF LOUVER REQUIRED FOR PROPER ROUGH-IN.
- PROVIDE ALUMINUM 1/4" SCREEN.
- PROVIDE WITH BACKDRAFT DAMPER.

### PLUMBING SCHEDULE

MARK	MANUFACTURER / MODEL NO.	DESCRIPTION	AREA SERVED	CONNECTIONS				REMARKS
				CW	HW	W	V	
FD-1	ZURNI ZN-415 W/ TYPE B	FLOOR DRAIN	PUMP ROOM 101	-	-	4"	2"	A
DCO	ZURNI Z-1400-HD NH CAST IRON TAP	DOUBLE CLEANOUT	EXTERIOR	-	-	4"	-	B

#### REMARK NOTES:

- PROVIDE AND INSTALL PROSET TRAP GUARD WITH FLOOR DRAIN.
- P.B. TOP IN OUTSIDE AREAS, CAST IRON TOP, VANDALPROOF SCREWS, GALVANIZED.



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CONSULTANTS

PROJECT NAME

LAC OTOWI 2 WELL EQUIPMENT DESIGN

REV.	DATE	DESCRIPTION	BY

PROJECT NO: 20-600-201-00

DESIGNED BY: AAB

DRAWN BY: AAB

CHECKED BY: EJV

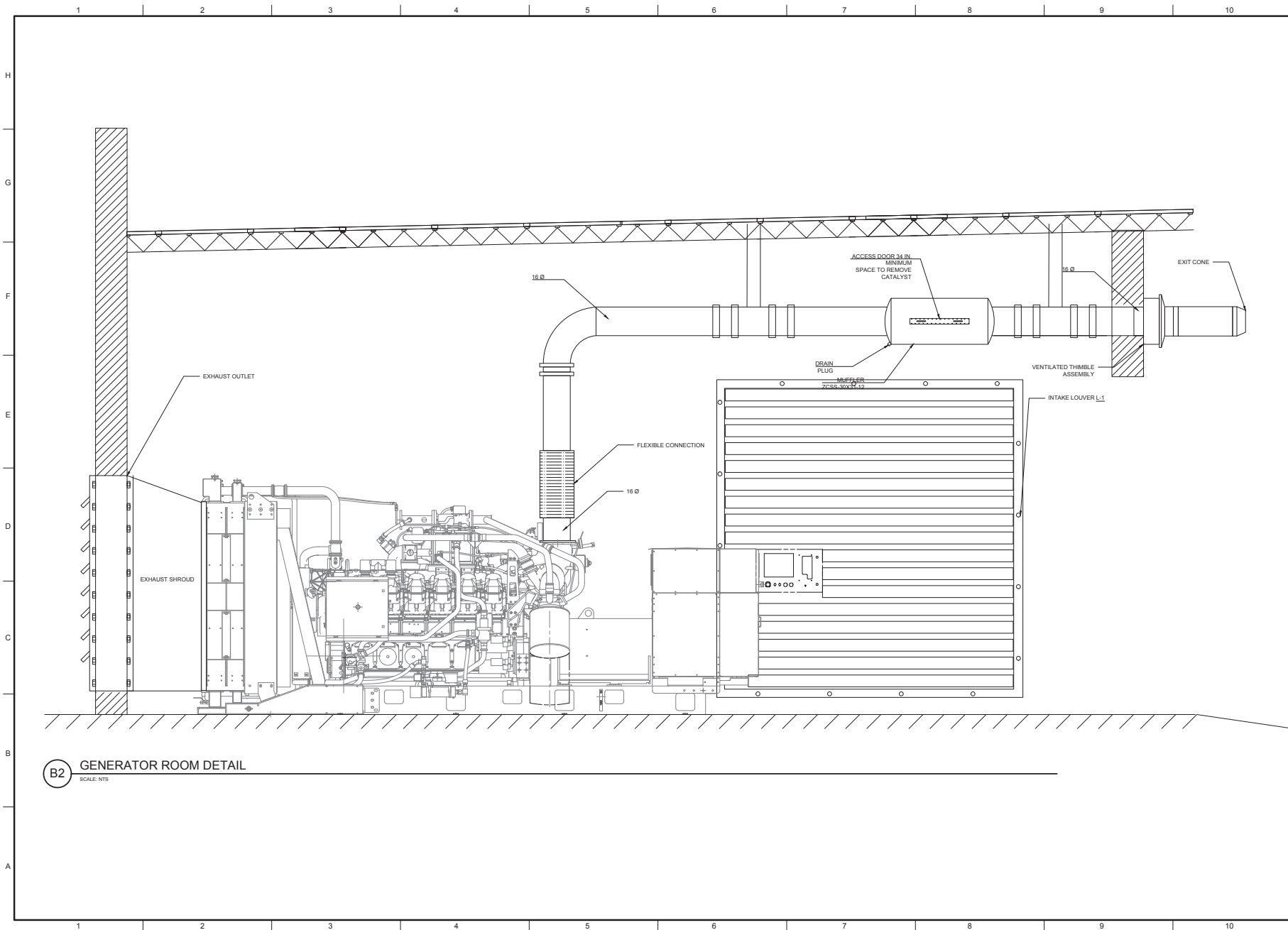
DATE: FEBRUARY 1 2021

SHEET TITLE

MECHANICAL FLOOR PLAN

SHEET NO:

M-101



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CONSULTANTS



SEAL

PROJECT NAME

LAC OTOWI 2 WELL  
EQUIPMENT DESIGN

REV.	DATE	DESCRIPTION	BY

PROJECT NO: 20-600-201-00  
DESIGNED BY: AAB  
DRAWN BY: AAB  
CHECKED BY: EJV  
DATE: FEBRUARY 1 2021

SHEET TITLE

MECHANICAL  
DETAILS

SHEET NO:

M-501