



**City of Portales  
Blackwater Well Field  
Well Equipping Phase 2**

ITB#: 2021-11-14  
WTB 5104-WPF

**ADDENDUM NO. 1**

December 7, 2021

**A. PRE-BID MEETING MINUTES**

A mandatory pre-bid meeting was held on November 30, 2021. Meeting minutes and sign-in-sheet are attached.

**B. ANSWERS TO QUESTIONS RECEIVED**

The following questions were received and answers are provided below (*answers in italics*).

1. Section 32 3113 Part 2.5 calls for pipe to meet requirements of ASTM 1083 (Specialty Order) and ASTM F 1043 (Industry Standard). This is not possible; it is one or the other. Please specify. *ASTM F1043 will be required. See revised specification attached.*
2. Height of fence fabric specified on plans is 7' tall on Fence section and 8' tall on Gate section. Please specify. *The total height of security fencing, including 3 strand barbed wire, shall be 7', 6' to top rail.*
3. Specification 260001 General Electrical Provisions Section 2.2-D states " All equipment and material that is provided shall meet the Buy American Act." Please clarify, does this pertain solely to material for the electrical portion of this project or to the Project in its entirety? *This does not apply. See revised specification, attached.*

**C. REVISIONS TO DRAWINGS**

Revised Sheets C-6, E-0, E-2, E-3, E-4, E-5, E-6 are attached.

**D. REVISIONS TO TECHNICAL SPECIFICATIONS**

The following technical specifications have been revised and are attached:

Section 26 00 01 – General Electrical Provisions

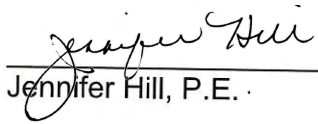
Section 32 31 13 – Chain Link Fences and Gates

**Section**

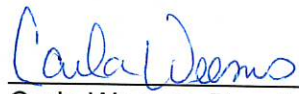
Attachments:

- Attachment A – Pre-Bid Meeting Minutes and Sign-In Sheet
- Attachment B – Revised Drawings
- Attachment C – Revised Specifications

Daniel B. Stephens & Associates, Inc.

  
\_\_\_\_\_  
Jennifer Hill, P.E.

City of Portales

  
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Carla Weems, Deputy Clerk/Acting CPO

Attachment A

Pre-Bid Meeting Minutes  
and Sign-In Sheet

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*Daniel B. Stephens & Associates, Inc.*

**CITY OF PORTALES  
Blackwater Well Field  
Well Equipping Phase 2  
Mandatory Pre-Bid Meeting Minutes  
ITB#2021-11-14  
WTB-5104**

**Date/Time:** November 30, 2021, 1:00 PM (MST)

**Location:** Portales City Hall, Public Works Conference Room, 100 W. 1st St., Portales, NM 88130

**Purpose:** Mandatory Pre-Bid Meeting for Referenced Project

1. In Attendance: See sign-in sheet, attached.
2. Introductions by City, engineers, and bidders
3. Scope of work reviewed:
  - a. Engineer gave summary of work to be completed under this contract.
    - i. Well equipping and site development for six replacement water supply wells in the City's Blackwater well field.
    - ii. Installation of well pumps and associated electrical improvements and controls.
    - iii. Well site improvements including site grading, fencing, concrete pad, piping and appurtenances, and piping connections to existing transmission pipelines will be completed.
  - b. The replacement well drilling will commence in January 2021.
    - i. Well equipping activities of this contract must be coordinated with well drilling.
    - ii. Once new replacement wells are equipped and connected, the old replaced wells will be disconnected and abandoned.
2. Bid Documents: Hard and electronic copies of contract documents and drawings are available from ARI's website. Bidders must register with ARI as planholders to receive addenda.
3. Deadline for Receipt of Bids: Bids are due December 16, 2021, 2:00 p.m. (MST) to the



*Daniel B. Stephens & Associates, Inc.*

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City's Office of the Chief Procurement Officer (City to advise whether teleconference is possible for bidders).

4. Questions: must be submitted in writing to Jennifer Hill at [jhill@geo-logic.com](mailto:jhill@geo-logic.com) by 5:00 p.m. (MST) on Tuesday, December 7, 2021. Answers to questions will be provided to plan holders via addenda by 5:00 p.m. (MST) on Friday, December 10, 2021.
5. Prevailing Wage Rates: Project is subject to Article 23 – Prevailing Wage Rates (page 22/550)
6. Required Bid Attachments: It is the bidders responsibility to obtain, complete and submit all required documents for bid submission, as well as to acknowledge any/all addenda per the ITB.
7. A site visit was held after the meeting.
8. Bidder Questions: None asked during meeting
9. Meeting adjourned for mandatory site visit.



Attachment B  
Revised Drawings

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## ELECTRICAL SYMBOL LEGEND

SYMBOL	DESCRIPTION
	WALL OUTLET AND SURFACE MOUNTED FIXTURE
	FLUORESCENT OUTLET AND FIXTURE
	SINGLE POLE SWITCH, FLUSH MOUNTED 48" A.F.F.
	DUPLEX CONVENIENCE OUTLET, 18" A.F.F.
	WEATHERPROOF DUPLEX CONVENIENCE OUTLET, 18" A.F.F.
	DUPLEX CONVENIENCE OUTLET, GROUND FAULT CIRCUIT INTERRUPTER, 18" A.F.F.
	JUNCTION BOX INSTALLED ABOVE LAY-IN CEILING WITH FLEXIBLE CONDUIT CONNECTION TO LAY-IN FIXTURES. MAXIMUM 4'-0" LENGTH OF CONDUIT, WITH REQUIRED CONDUCTORS ALONG WITH GREEN GROUND CONDUCTOR
	JUNCTION BOX FLUSH IN WALL. HEIGHT AS INDICATED ON DRAWINGS, WITH CONNECTION TO EQUIPMENT
	CONCEALED BRANCH CIRCUIT WITH CONDUCTORS AS INDICATED. NEUTRAL, HOT, SWITCH LEG AND GROUND RESPECTIVELY
	BRANCH CIRCUIT OR CONDUIT INSTALLED UNDERGROUND OR UNDER FLOOR
	HOMERUN TO PANELBOARD WITH BRANCH CIRCUIT NUMBERS INDICATED
	SOLENOID VALVE
	LIMIT SWITCH
	PRESSURE TRANSMITTER
	FIRE ALARM SMOKE AND HEAT DETECTOR, PHOTOELECTRIC TYPE, 120V AUX CONTACTS MOTOR CONNECTION FOR FRACTIONAL HP MOTOR (1/3 HP OR LESS). PROVIDE THERMAL OVERLOAD SWITCH (WEATHERPROOF IF OUTSIDE) ADJACENT TO MOTOR UNLESS SWITCH IS SHOWN ELSEWHERE ON PLANS
	MOTOR CONNECTION FOR MOTOR WITH HP INDICATED
	DISCONNECT SWITCH, POLES AND RATING AS INDICATED OR AS REQUIRED, NEMA 3R IF INSTALLED OUTSIDE
	FUSED DISCONNECT SWITCH, FUSE, POLES AND RATING AS INDICATED OR AS REQUIRED, NEMA 3R IF INSTALLED OUTSIDE
	COMBINATION MAGNETIC MOTOR CONTROLLER/DISCONNECT SWITCH. SIZE, POLES, FUSES AND OVERLOADS PER MOTOR SERVED
	MAGNETIC MOTOR CONTROLLER, SIZE AND POLES PER MOTOR SERVED
	TRANSFORMER, DRY TYPE, SIZE AS INDICATED
	THERMOSTAT(M), 48" A.F.F.
	120V PANELBOARD, REFER TO PANEL SCHEDULE
	277V PANELBOARD, REFER TO PANEL SCHEDULE
	SPECIAL PURPOSE CABINET, AS INDICATED ON DRAWINGS
	INTRUSION ALARM DOOR CONTACT MAGNETIC
	NORMALLY OPEN CONTACT
	NORMALLY CLOSED CONTACT
	CONTACTOR
	MOTOR OVERLOADS
	RED PILOT LIGHT
	GREEN PILOT LIGHT
	TRANSFORMER
	RELAY
	SWITCH
	FUSE(S)
	CIRCUIT BREAKER
	PROGRAMMABLE LOGIC CONTROLLER
	REMOTE TERMINAL UNIT
	THERMOSTAT
	WEATHERPROOF (NEMA 3R)

NOTES:

- LIGHTING FIXTURES ARE OF TYPE AS INDICATED ON LIGHT FIXTURE SCHEDULE U.N.O.
- MOUNTING HEIGHTS FOR DEVICES CALLED OUT AT 18" A.F.F. ARE TO THE BOTTOM OF THE DEVICE UNLESS OTHERWISE NOTED.
- MOUNTING HEIGHTS FOR DEVICES CALLED OUT AT 48" A.F.F. ARE TO THE TOP OF THE DEVICE UNLESS OTHERWISE NOTED.
- ANY SPECIFIC DETAILS ABOVE (MOUNTING HEIGHTS, PART NUMBERS, CONNECTION METHODS, ETC.) MAY BE MODIFIED OR REPLACED BY INFORMATION ON PLANS, SCHEDULES, DETAILS, RISERS, ETC. DETAILS NOT SPECIFICALLY MODIFIED REMAIN AS GIVEN ABOVE.

## GENERAL NOTES

### SPECIFICATIONS

- IF THERE IS A CONFLICT BETWEEN PLANS/SPECIFICATIONS AND MANUFACTURER'S RECOMMENDATIONS FOR ANY DEVICE, PART, OR MATERIAL USED IN THE PROJECT, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY IN WRITING THE ENGINEER FOR CLARIFICATION.
- THE CONTRACTOR SHALL FAMILIARIZE HIM/HERSELF WITH THE PLANS, AND THE SITE CONDITIONS PRIOR TO BID OPENING AND SHALL IMMEDIATELY NOTIFY THE ENGINEER IN WRITING OF ANY AMBIGUITIES, CONTRADICTIONS OR IRREGULARITIES IN THE PLANS.
- IF DURING BIDDING OR CONSTRUCTION, THE CONTRACTOR IS IN DOUBT AS TO THE TRUE MEANING OF ANY PART OF THE PLANS, SPECIFICATIONS, OR OTHER CONTRACT DOCUMENTS, OR DISCREPANCIES IN OR POSSIBLE OMISSIONS FROM THE DRAWINGS OR SPECIFICATIONS, THEY SHALL IMMEDIATELY NOTIFY THE ENGINEER IN WRITING AND REQUEST AN INTERPRETATION OF CORRECTION THEREOF. DURING THE BIDDING PROCESS AN ADDENDUM (IF NEEDED) WILL BE ISSUED.
- THE CONTRACT, IF AWARDED, WILL BE ON THE BASIS OF MATERIAL AND EQUIPMENT SPECIFIED OR DESCRIBED IN THE BIDDING DOCUMENTS WITHOUT CONSIDERATION OF POSSIBLE SUBSTITUTE OR "OR EQUAL" ITEMS. WHEREVER A BRAND NAME IS SPECIFIED OR DESCRIBED IN THE BIDDING DOCUMENTS A SUBSTITUTE OR "OR EQUAL" ITEM OF MATERIAL OR EQUIPMENT MAY BE FURNISHED OR USED BY CONTRACTOR IF ACCEPTABLE TO ENGINEER. APPLICATION FOR SUCH ACCEPTANCE WILL NOT BE CONSIDERED BY ENGINEER UNTIL AFTER THE EFFECTIVE DATE OF AGREEMENT. THE PROCEDURE FOR SUBMISSION OF ANY SUCH APPLICATION BY CONTRACTOR AND CONSIDERATION BY ENGINEER IS SET FORTH IN THE GENERAL CONDITIONS.

### EXISTING UTILITIES & OBSTACLES TO WORK

- THE CONTRACTOR IS RESPONSIBLE TO INSTALL ALL ITEMS DESCRIBED IN THESE PLANS IN A MANNER THAT PROTECTS THE EXISTING FACILITY. THE CONTRACTOR MUST CONTACT THE ENGINEER IMMEDIATELY IF HE IS UNABLE TO PERFORM THIS WORK WITHOUT DAMAGE TO THE EXISTING FACILITY. THE CONTRACTOR MUST FIELD VERIFY ALL EXISTING INFORMATION SHOWN ON THESE PLANS. DESIGN ELEMENTS OF THIS PROJECT WILL NOT CHANGE WITHOUT CHANGE ORDER UNLESS THE CONTRACTOR NOTIFIES THE ENGINEER IN A TIMELY MANNER REGARDING ITEMS DESCRIBED IN THIS NOTE. CHANGES IN ALIGNMENT CAUSED BY UNKNOWN OR UNANTICIPATED SITE CONDITIONS SHALL BE ACCOUNTED FOR BY THE APPROPRIATE UNIT PRICES, AS RECOMMENDED BY THE ENGINEER AND APPROVED BY THE OWNER.
- THE EXISTENCE, CONDITION AND LOCATION OF ANY UNDERGROUND UTILITIES OR STRUCTURES SHOWN IN THESE PLANS WAS OBTAINED BY A CAREFUL SEARCH OF AVAILABLE RECORDS. THE CONTRACTOR IS REQUIRED TO TAKE ALL PRECAUTIONARY MEASURES TO PROTECT THE UTILITIES SHOWN, AND ANY OTHER LINES OR STRUCTURES NOT SHOWN ON THESE PLANS, AND IS RESPONSIBLE FOR THEIR LOCATING, PROTECTION OF, OR ANY DAMAGE TO THESE LINES OR STRUCTURES. THIS DOES NOT RELIEVE THE CONTRACTOR FROM HIS RESPONSIBILITY TO NOTIFY ALL UTILITY COMPANIES AND OBTAIN LINE SPOTS.
- THE FOLLOWING IS A LIST OF POSSIBLE OBSTRUCTIONS AND SHALL NOT BE CONSIDERED A COMPLETE LIST OF POSSIBLE OBSTRUCTIONS: EXISTING UTILITIES, STRUCTURE, GEOTECHNICAL FEATURES, ALL CONDUIT, CABLES, PIPES, WATERLINES, SEWER LINES, GAS LINES, POWER LINES, TELEPHONE AND TELEGRAPH LINES, TREES, MONUMENTS, TRAFFIC CONTROL DEVICES AND OTHER STRUCTURES, BOTH BELOW AND ABOVE GROUND.
- CONTRACTOR SHALL BE HELD RESPONSIBLE FOR COSTS OF REPAIR OF ANY AND ALL DAMAGE TO ANY UTILITY (WHICH IS PREVIOUSLY KNOWN AND DISCLOSED TO HIM BY THE UTILITY OR SHOWN ON THESE PLANS) AS MAY BE CAUSED BY HIS OPERATIONS.
- FIVE (5) WORKING DAYS PRIOR TO ANY EXCAVATION, CONTRACTOR MUST CONTACT NEW MEXICO ONE-CALL SYSTEM, INC. (505) 260-1990, FOR LOCATION OF EXISTING UTILITIES.
- CONTRACTOR SHALL GIVE ALL PUBLIC AND PRIVATE UTILITY COMPANIES NOTICE AS SOON AS POSSIBLE, IN NO EVENT LESS THAN FORTY EIGHT (48) HOURS, FOR ANY WORK THAT IS UNDERSTOOD TO INTERFERE WITH THE SERVICE OF ANY EXISTING PUBLIC OR PRIVATE UTILITY. IF SUCH PUBLIC OR PRIVATE UTILITY DOES NOT COOPERATE FOR THE PROTECTION OF ITS SERVICES, CONTRACTOR SHALL NOTIFY ENGINEER.
- CONTRACTOR SHALL IMMEDIATELY REPORT ANY DAMAGES TO PUBLIC OR PRIVATE PROPERTY TO THE OWNER OF THE PROPERTY INVOLVED AND TO THE ENGINEER. CONTRACTOR SHALL REPAIR OR RESTORE AT HIS OWN EXPENSE ANY DAMAGE TO PUBLIC OR PRIVATE PROPERTY, FOR WHICH THEY ARE DIRECTLY OR INDIRECTLY RESPONSIBLE, TO A CONDITION EQUAL TO THAT EXISTING BEFORE DAMAGE. CONTRACTOR SHALL PROMPTLY NOTIFY HIS INSURANCE CARRIER OF SUCH DAMAGE. IF CONTRACTOR FAILS TO GIVE SUCH NOTICE TO HIS INSURANCE CARRIER OR REFUSES TO EFFECT SUCH REPAIRS OR RESTORATION UPON RECEIPT OF NOTICE, THE ENGINEER MAY CAUSE SUCH REPAIRS OR RESTORATION AND DEDUCT THE COST THEREOF FROM MONEYS DUE, OR WHICH MAY BECOME DUE, TO THE CONTRACTOR.
- CONTRACTOR IS RESPONSIBLE FOR RECORDING EXISTING CONDITIONS IN ACCORDANCE WITH THE SUPPLEMENTARY CONDITIONS OF THE CONTRACT BEFORE CONSTRUCTION BEGINS. THE RECORD OF EXISTING CONDITIONS SHALL BE USED AS THE "EQUAL CONDITION BEFORE DAMAGE" IN THE EVENT OF DAMAGE TO PUBLIC OR PRIVATE PROPERTY. CONTRACTOR FAILURE TO RECORD EXISTING CONDITIONS WILL MAKE THE OWNERS CLAIM OF "EQUAL CONDITION BEFORE DAMAGE" THE STANDARD THE CONTRACTOR SHALL BE RESPONSIBLE FOR MEETING AND THE ENGINEER WILL BE IN THE POSITION OF NOT BEING ABLE TO SUPPORT THE CONTRACTOR IN THE MEDIATION OF ANY DISPUTE.
- UTILITY LOCATION CONTRACTOR IS RESPONSIBLE FOR FIELD VERIFICATION OF LOCATION OF ALL EXISTING UTILITIES.

### SITE CONDITIONS

- CONTRACTOR SHALL MAINTAIN ACCESS TO ALL FACILITIES ADJACENT TO THE CONSTRUCTION AREA.
- EPA STORM WATER DISCHARGE REGULATIONS. THE CONTRACTOR IS RESPONSIBLE FOR COMPLIANCE TO APPLICABLE PORTIONS OF THE EPA STORM WATER DISCHARGE REGULATIONS.
- UST ABATEMENT. THE CONTRACTOR SHALL USE WATERING EQUIPMENT FOR DUST POLLUTION ABATEMENT AS REQUIRED OR AS DIRECTED BY THE ENGINEER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING AND SUPPLYING WATER. THIS WORK SHALL BE CONSIDERED INCIDENTAL TO CONSTRUCTION.

### SITE DESIGN

- SUBGRADE. ALL ELECTRICAL SUBGRADE AND TRENCH BACKFILL SHALL BE COMPACTED TO 95 % OF STANDARD PROCTOR. ALL SUBGRADE AND BACKFILL SHALL BE COMPACTED IN MAXIMUM 8" LOOSE LIFTS. MOISTURE CONTENT AT THE TIME OF COMPACTION SHALL NOT EXCEED OPTIMUM OR BE LESS THAN 5 PERCENTAGE POINTS BELOW OPTIMUM. DRIVEWAYS, APRONS, FILLETS, CURB AND GUTTER, AND OTHER CONCRETE PAVEMENT SHALL BE PLACED ON 6" OF COMPACTED SUBGRADE.
- RESTORE SURFACE AT TRENCH TO EXISTING CONDITIONS.

## COMMUNICATION

- CONTRACTOR SHALL KEEP THE OWNER AND THE ENGINEER UPDATED WEEKLY ON THE CONSTRUCTION SCHEDULE AND/OR PHASE SCHEDULE, AND PROGRESS TO DATE.

## STAGING STORAGE & DEBRIS DISPOSAL

- DEBRIS GENERATED BY CONSTRUCTION ACTIVITIES SHALL BE DISPOSED OF AT A PERMITTED LANDFILL OR OTHER DULY CERTIFIED REFUSE FACILITY. THE DISPOSAL OF DEBRIS IS NOT A PAY ITEM.

## RECORD DRAWINGS

- THE CONTRACTOR SHALL PROVIDE A RECORD SKETCH ON THESE PLANS FOR THE AS-CONSTRUCTED CONDITIONS.

## PHASE AND SCHEDULE

- CONTRACTOR SHALL PHASE AND SCHEDULE WORK IN SUCH A WAY AS TO PROVIDE MINIMAL POWER OUTAGES AT THE FACILITY. A PROJECT SCHEDULE SHALL BE SUBMITTED TO THE OWNER FOR REVIEW PRIOR TO ISSUANCE OF NOTICE-TO-PROCEED. CHANGES IN SCHEDULE SHALL BE PRESENTED TO OWNER AND ENGINEER AT LEAST 7 DAYS PRIOR TO PROPOSED IMPLEMENTATION. THESE SCHEDULES, SCHEMATICS AND DIAGRAMS SHALL BE UPDATED WEEKLY AS THE WORK PROGRESSES. MOST CHANGE OVER SHALL BE DONE ON WEEKENDS OR AFTER HOURS.

## SUBMITTALS

- CONTRACTOR SHALL PROVIDE SUBMITTALS FOR ALL EQUIPMENT, MATERIALS, PROCESSES AND SCHEDULES AND AS REQUESTED BY ENGINEER.

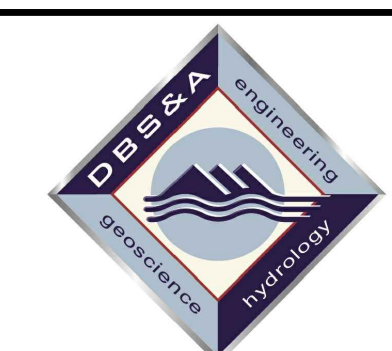
## PROGRAMMING OF CONTROLS, COMMUNICATION AND SCADA SYSTEMS

- CONTRACTOR RESPONSIBLE FOR PROVIDING, INSTALLING, AND PROGRAMMING A COMPLETE AND WORKING SYSTEM.
- CONTRACTOR SHALL COORDINATE ALL PROGRAMMING REQUIREMENTS WITH OWNER AND SHALL REFER TO PLANS AND SPECIFICATIONS FOR SEQUENCE OF OPERATIONS. REFER TO CONTROL WIRING SCHEDULE, DISCRETE & ANALOG I/O LIST, CONTROL AND WIRING DIAGRAMS, AND SPECIFICATIONS FOR ADDITIONAL INFORMATION.
- CONTACT THE CITY FOR ADDITIONAL INFORMATION, AS REQUIRED, REGARDING THE EXISTING SCADA SYSTEM AND INTEGRATION OF THIS PROJECT.

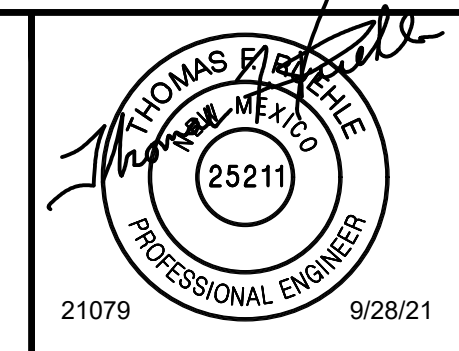
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REV. NO.	DATE	DESCRIPTION	APPROVED BY
1	12/1/21	UPDATED SCADA CONTACT INFORMATION	

DATE OF ISSUE: 9/28/21  
 DESIGNED BY: TFR  
 DRAWN BY: TFR  
 CHECKED BY: DDR  
 APPROVED BY: DDR



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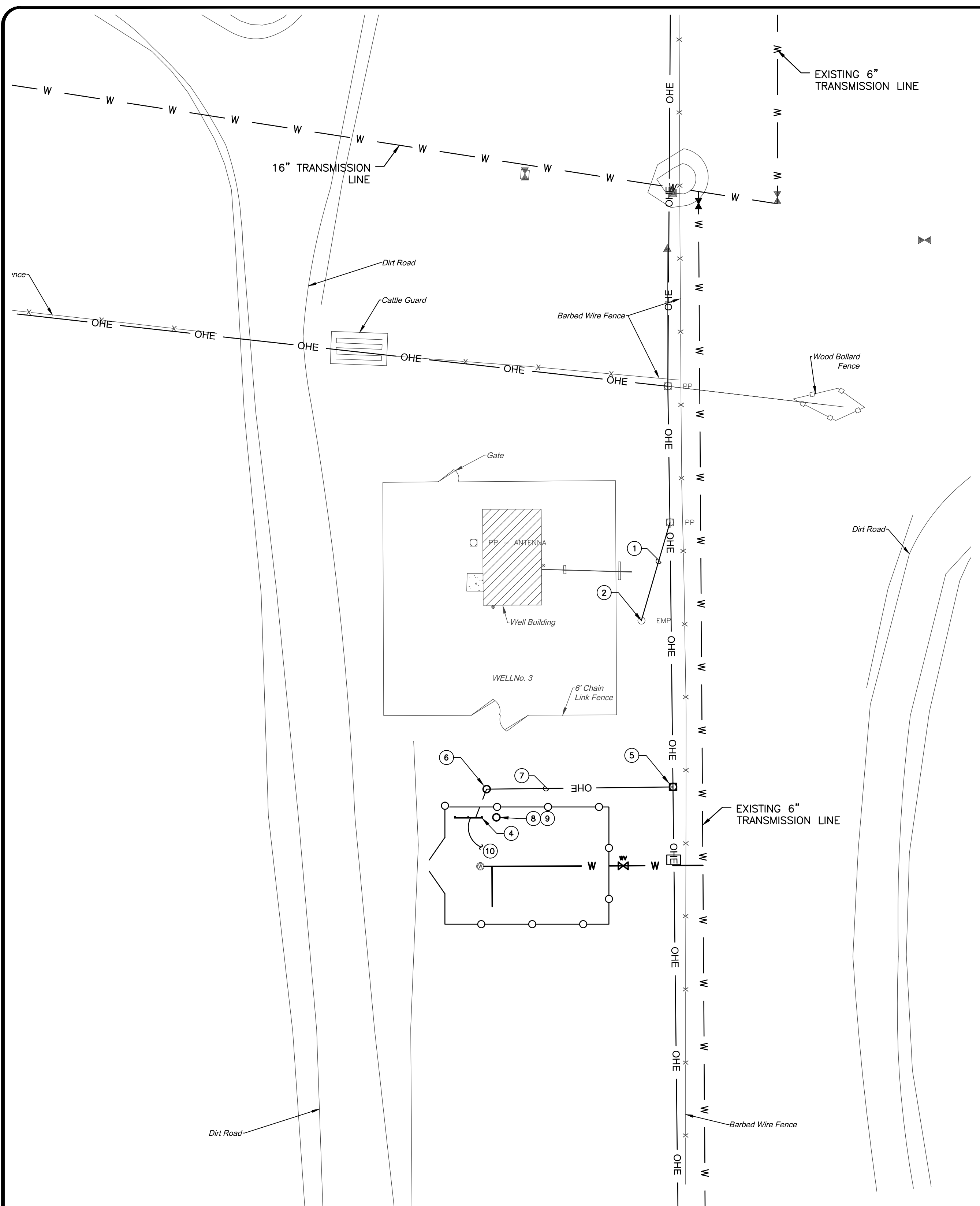
CITY OF PORTALES  
 PORTALES, NM

BLACKWATER WELLFIELD  
 EQUIPPING PHASE 2  
 ROOSEVELT COUNTY, NM

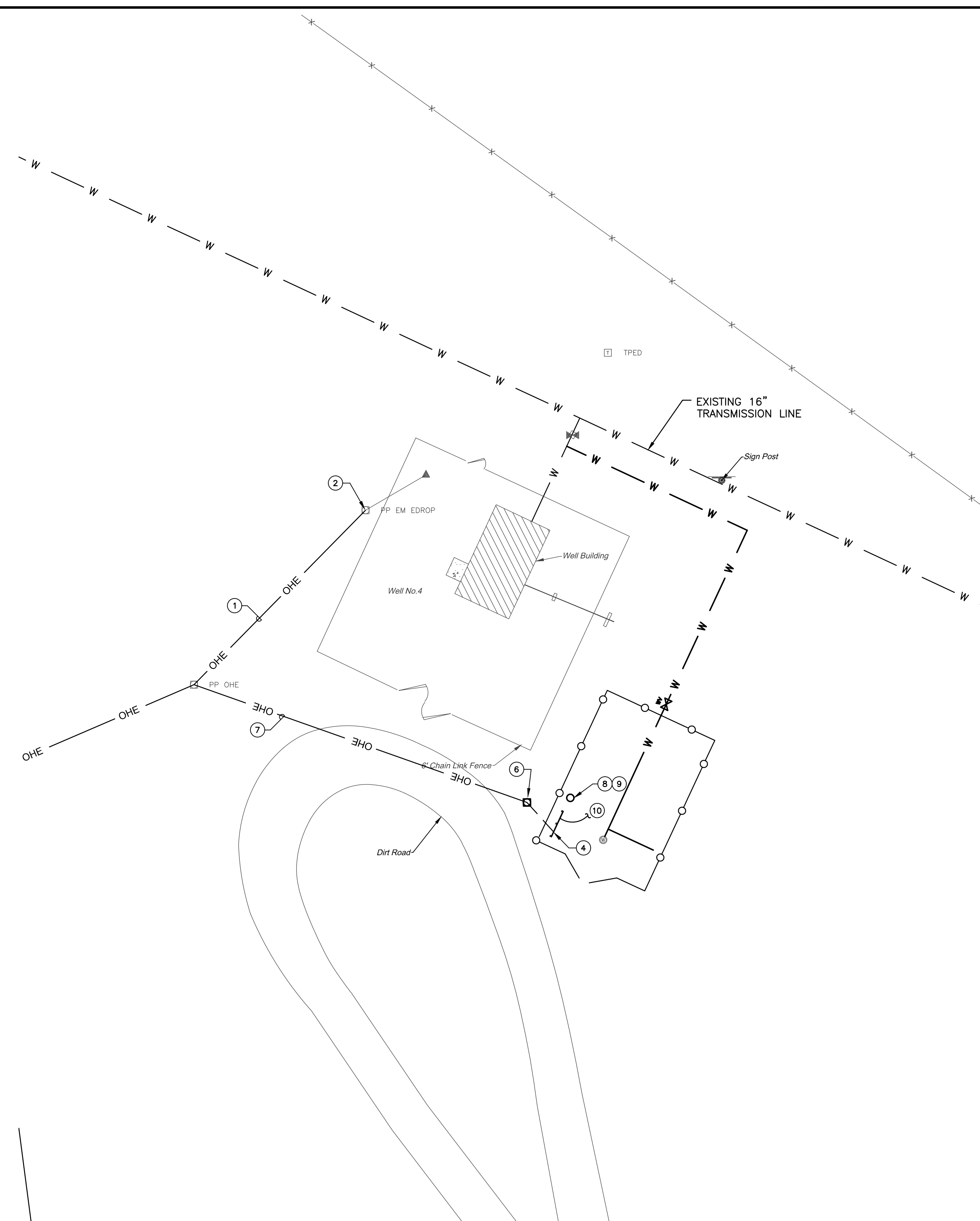
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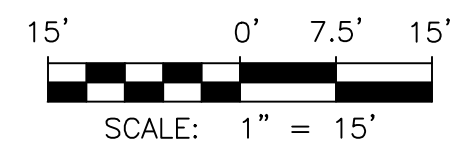
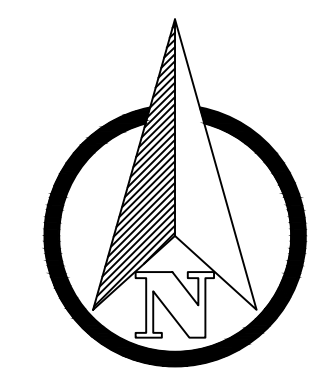
**WELL 3 - SITE PLAN** 1  
SCALE: 1"=15'



**WELL 4 - SITE PLAN** 2  
SCALE: 1"=15'

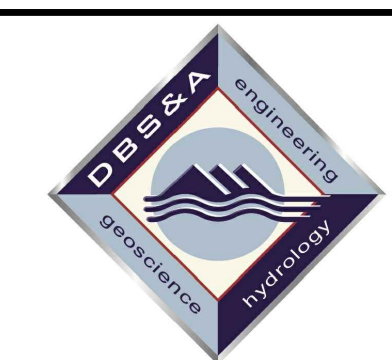
- GENERAL NOTES:**
- EXISTING SERVICE AND ALL ASSOCIATED WIRING AND CONTROLS TO EXISTING WELLS SHALL BE ONLY BE REMOVED AFTER NEW REPLACEMENT WELL IS COMPLETE. COORDINATE WITH CIVIL.
  - ALL CHANGES AND/OR UPGRADES TO PRIMARY WIRING, SECONDARY WIRING, SERVICES, AND METERING SHALL BE COORDINATED WITH LOCAL UTILITY PRIOR TO COMMENCING WORK.
  - REFER TO POWER RISER DIAGRAMS FOR ADDITIONAL INFORMATION.

- KEY NOTES:**
- EXISTING OVERHEAD 480Y/277V-3Ø SECONDARY TO BE REMOVED. COORDINATE REMOVAL WITH XCEL ENERGY.
  - EXISTING METERING AND SERVICE TO BE REMOVED. COORDINATE REMOVAL WITH XCEL ENERGY.
  - REMOVE EXISTING ELECTRICAL EQUIPMENT IN ITS ENTIRETY. OWNER SHALL FIRST RIGHT OF REFUSAL.
  - APPROXIMATE LOCATION OF NEW ELECTRICAL EQUIPMENT RACK. COORDINATE FINAL LOCATION AND ORIENTATION IN THE FIELD PRIOR TO INSTALLATION.
  - COORDINATE WITH XCEL ENERGY FOR INSTALLATION OF NEW PRIMARY POWER POLE. COORDINATE EXACT LOCATION IN THE FIELD.
  - COORDINATE WITH XCEL ENERGY FOR INSTALLATION OF NEW SECONDARY POWER POLE. COORDINATE EXACT LOCATION IN THE FIELD.
  - NEW OVERHEAD SECONDARY POWER. COORDINATE WITH XCEL ENERGY.
  - WOOD POLE FOR RADIO ANTENNA. PROVIDE AND INSTALL A 25" CREOSOTE SOAKED (FULL LENGTH HOT/COLD TREATMENT) WOOD POLE. POLES SHALL BE 24" DIAMETER, 6" FROM BUTT AND 18.8" AT TOP. 5'-0" MINIMUM EMBEDMENT BELOW FINAL GRADE. COORDINATE FINAL LOCATION IN THE FIELD.
  - PROVIDE AND INSTALL POWERBEAM 5AC GEN2 PBE-RAD-400. CONTACT THE CITY FOR ADDITIONAL INFORMATION, AS REQUIRED, REGARDING THE EXISTING SCADA SYSTEM AND INTEGRATION OF THIS PROJECT
  - PROVIDE AND INSTALL 3#10 THWN CU IN 1" CONDUIT AND EXTEND TO 120V HEAT TRACE EQUIPMENT. CONNECT TO A 20A-1P GFPE CIRCUIT BREAKER. REFER TO SUPPLEMENTAL SPECIFICATION SECTION 15403 FOR ADDITIONAL INFORMATION.

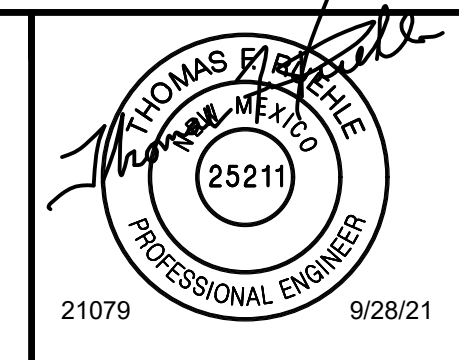


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CITY OF PORTALES  
 PORTALES, NM

BLACKWATER WELLFIELD  
 EQUIPPING PHASE 2  
 ROOSEVELT COUNTY, NM

WELL 3 AND 4 - SITE PLANS

SHEET 11 OF 15  
 DWG NO. E-2

JOB NO.  
 DB18.1281

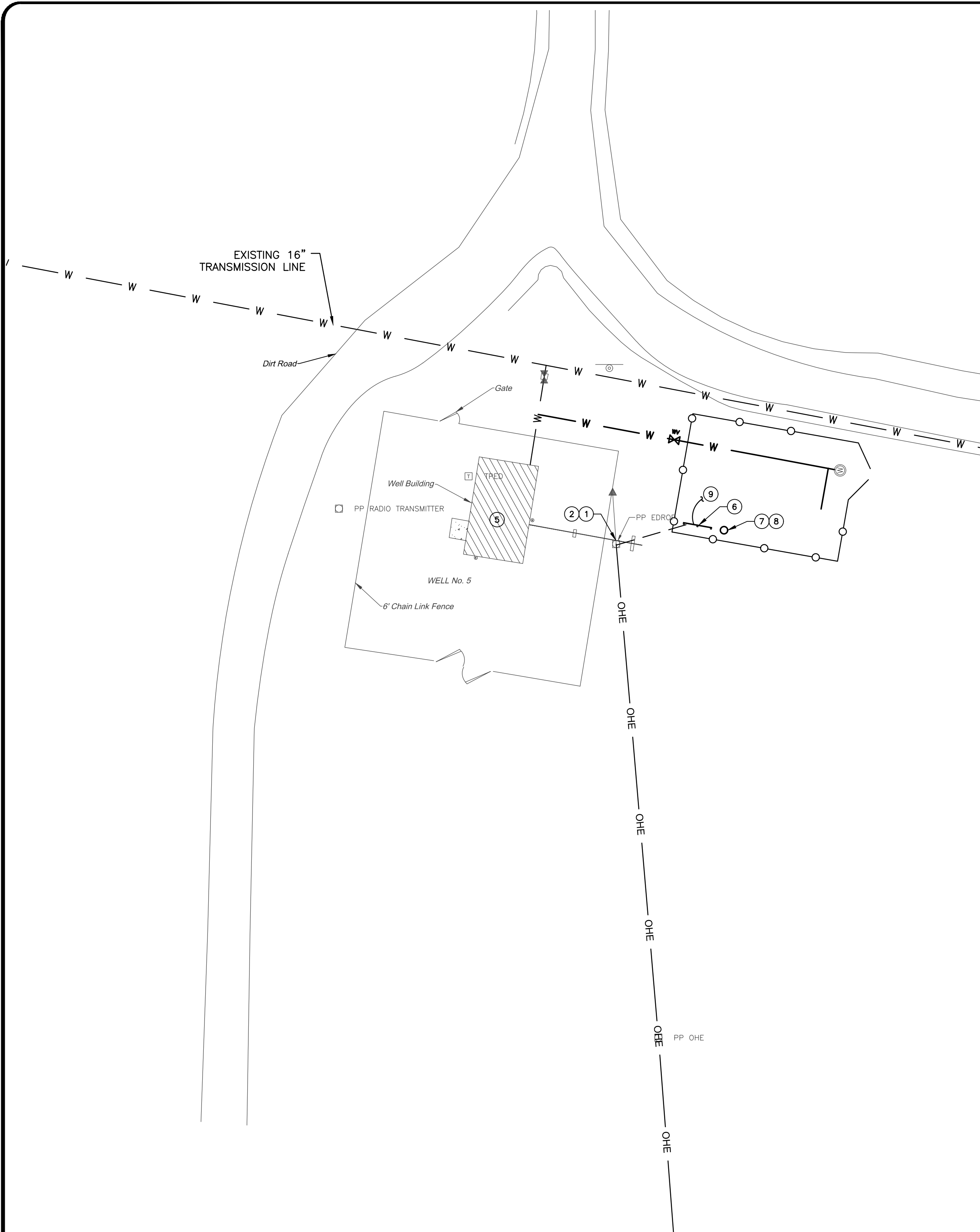
F:\21079 PORTALES WELLS\21079 CADD\CONSTRUCT\ELECTRICAL\E-2 ELEC SITE PLAN\_WELL 3 AND 4.DWG December 1, 2021 - 2:14 PM BY: TOM RUEHLE

**GENERAL NOTES:**

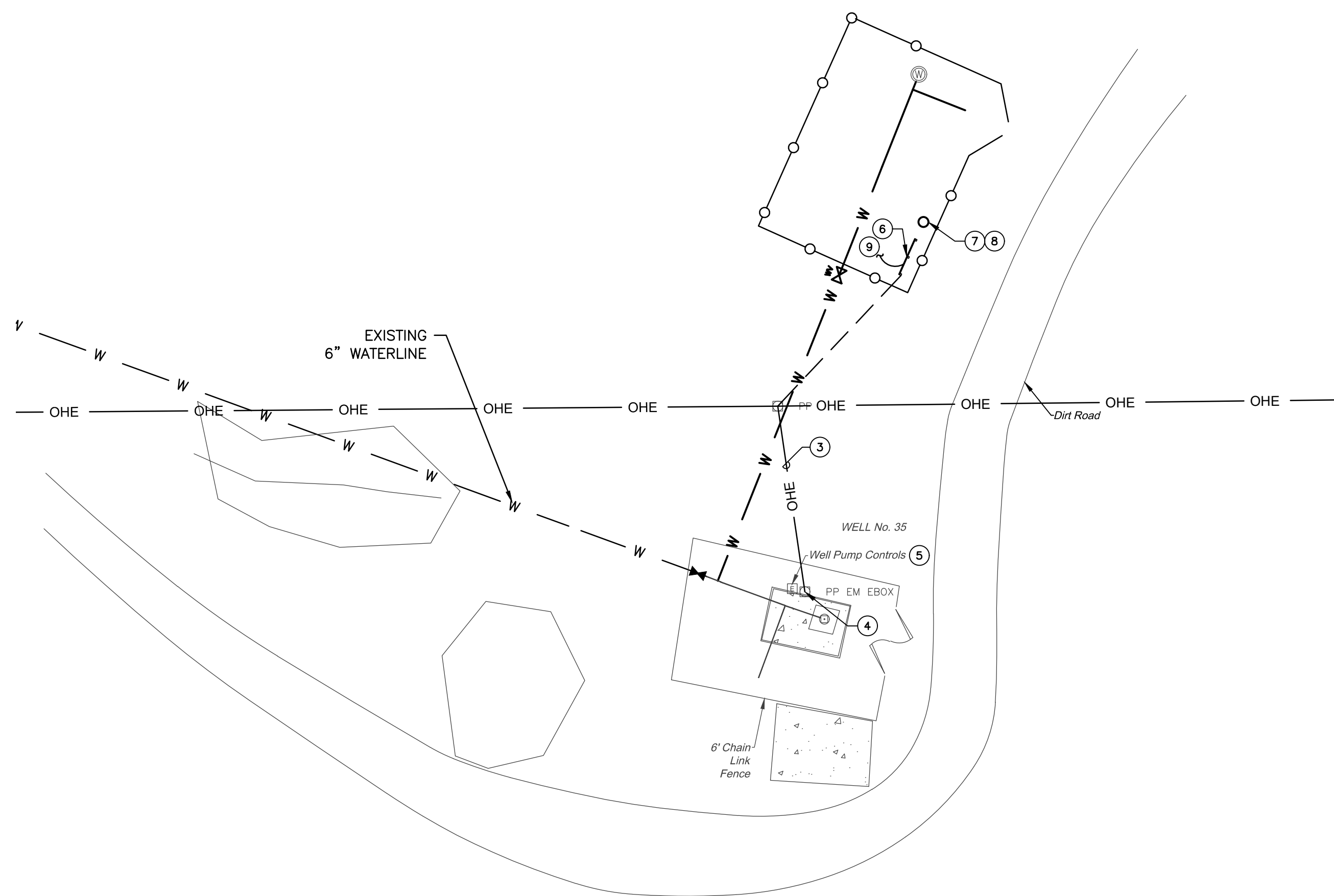
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**KEY NOTES:**

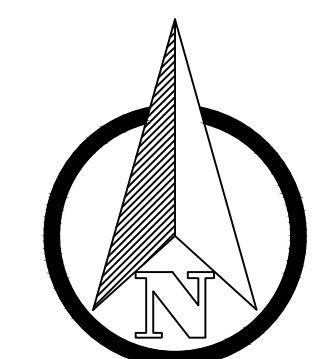
- ① EXISTING 480Y/277V-3Ø SECONDARY TO BE REMOVED. COORDINATE REMOVAL WITH XCEL ENERGY.
- ② EXISTING METERING AND SERVICE TO BE REMOVED. COORDINATE REMOVAL WITH XCEL ENERGY.
- ③ EXISTING OVERHEAD 480Y/277V-3Ø SECONDARY TO BE REMOVED. COORDINATE REMOVAL WITH ROOSEVELT COUNTY ELECTRIC COOPERATIVE.
- ④ EXISTING METERING AND SERVICE TO BE REMOVED. COORDINATE REMOVAL WITH ROOSEVELT COUNTY ELECTRIC COOPERATIVE.
- ⑤ REMOVE EXISTING ELECTRICAL EQUIPMENT IN ITS ENTIRETY. OWNER SHALL FIRST RIGHT OF REFUSAL.
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**WELL 5 - SITE PLAN** ①  
SCALE: 1"=15'

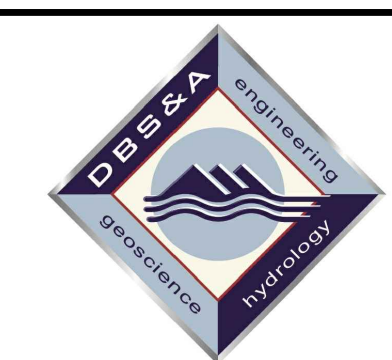


**WELL 35 - SITE PLAN** ②  
SCALE: 1"=15'

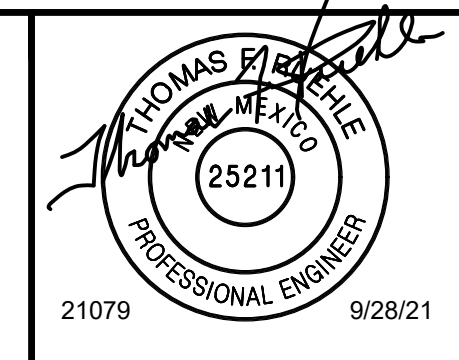


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 PORTALES, NM

BLACKWATER WELLFIELD  
 EQUIPPING PHASE 2  
 ROOSEVELT COUNTY, NM

WELL 5 AND 35 - SITE PLANS

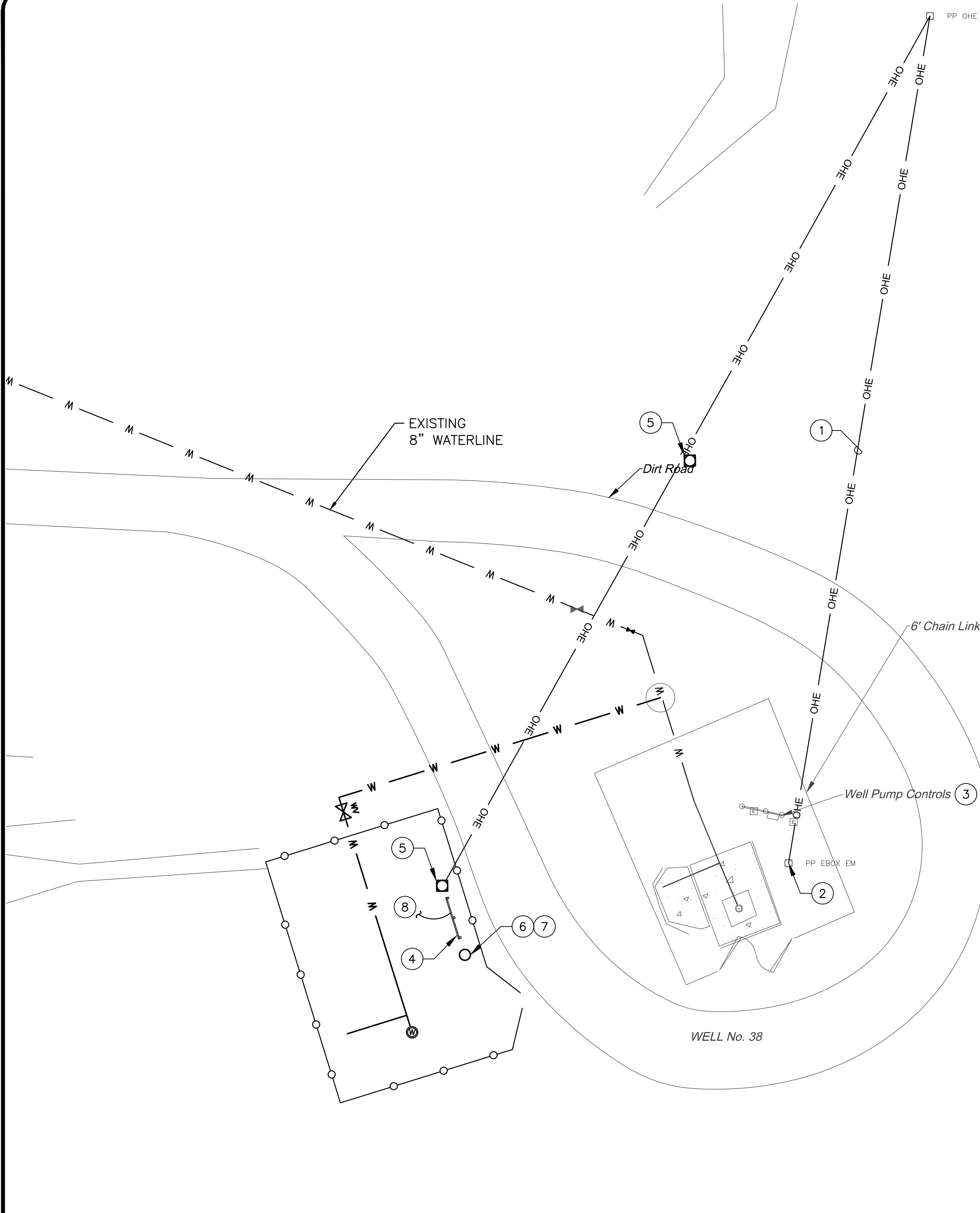
SHEET 12 OF 15  
 DWG NO. E-3

JOB NO.  
 DB18.1281

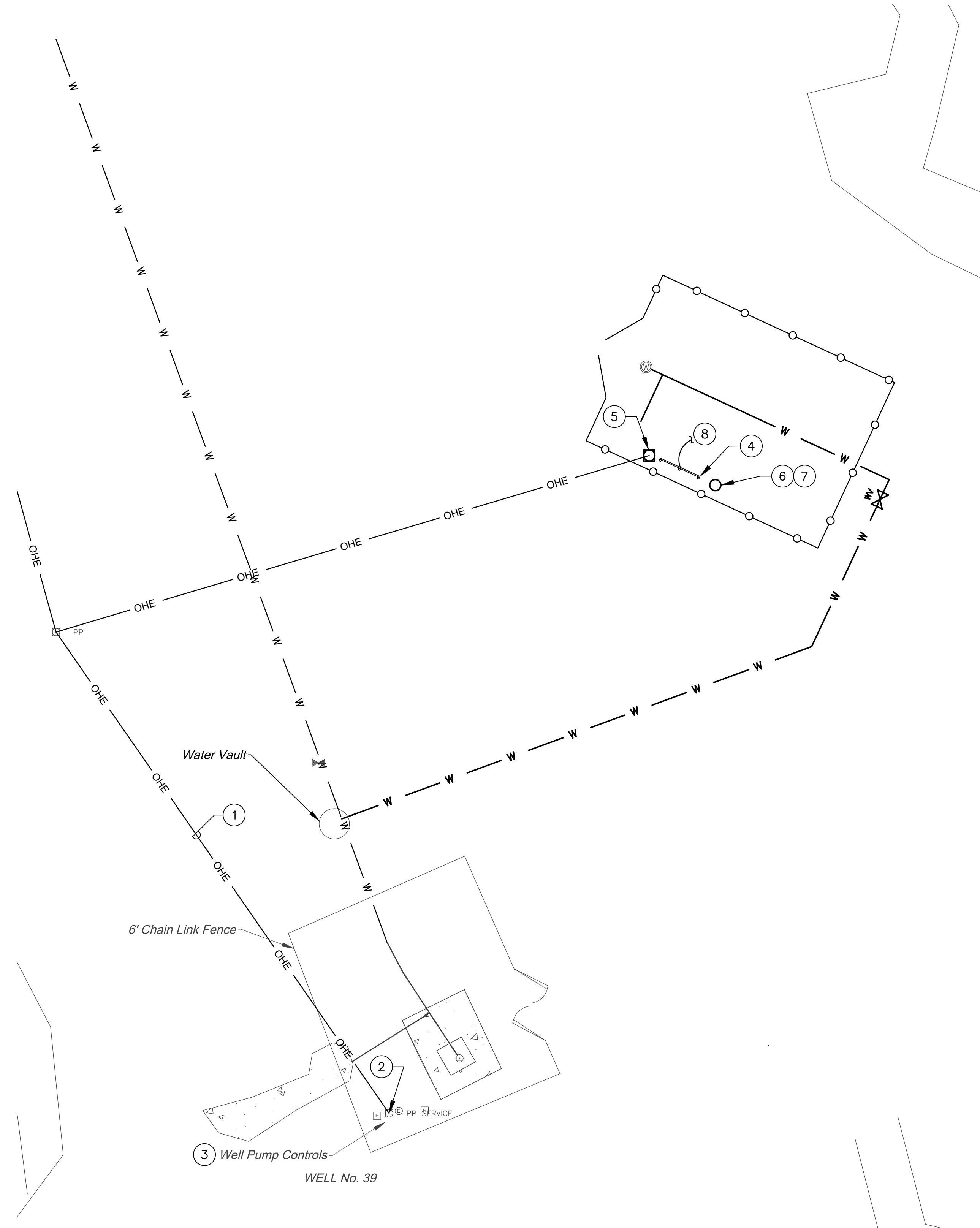
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F:\21079 PORTALES WELLS\21079 CADD\CONSTRUCT\ELECTRICAL\E-4 ELEC SITE PLAN\_WELL\_38 AND\_39.DWG December 1, 2021 - 2:14 PM BY: TOM RUEHLE



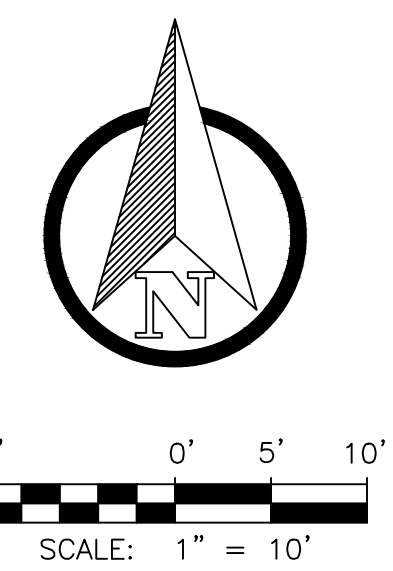
**WELL 38 - SITE PLAN** 1  
SCALE: 1"=10'



**WELL 39 - SITE PLAN** 2  
SCALE: 1"=10'

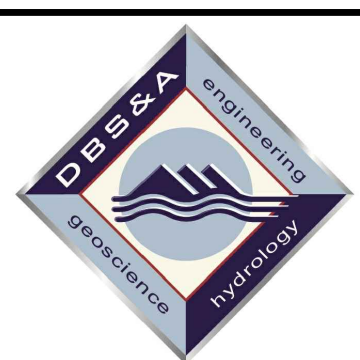
- GENERAL NOTES:**
- EXISTING SERVICE AND ALL ASSOCIATED WIRING AND CONTROLS TO EXISTING WELLS SHALL BE ONLY BE REMOVED AFTER NEW REPLACEMENT WELL IS COMPLETE. COORDINATE WITH CIVIL.
  - ALL CHANGES AND/OR UPGRADES TO PRIMARY WIRING, SECONDARY WIRING, SERVICES, AND METERING SHALL BE COORDINATED WITH LOCAL UTILITY PRIOR TO COMMENCING WORK.
  - REFER TO POWER RISER DIAGRAMS FOR ADDITIONAL INFORMATION.

- KEY NOTES:**
- EXISTING OVERHEAD 480Y/277V-3Ø SECONDARY TO BE REMOVED. COORDINATE REMOVAL WITH ROOSEVELT COUNTY ELECTRIC COOPERATIVE.
  - EXISTING METERING AND SERVICE TO BE REMOVED. COORDINATE REMOVAL WITH ROOSEVELT COUNTY ELECTRIC COOPERATIVE.
  - REMOVE EXISTING ELECTRICAL EQUIPMENT IN ITS ENTIRETY. OWNER SHALL FIRST RIGHT OF REFUSAL.
  - APPROXIMATE LOCATION OF NEW ELECTRICAL EQUIPMENT RACK. COORDINATE FINAL LOCATION AND ORIENTATION IN THE FIELD PRIOR TO INSTALLATION.
  - COORDINATE WITH ROOSEVELT COUNTY ELECTRIC COOPERATIVE FOR INSTALLATION OF NEW SECONDARY POWER POLE. COORDINATE EXACT LOCATION IN THE FIELD.
  - WOOD POLE FOR RADIO ANTENNA. PROVIDE AND INSTALL A 25' CREOSOTE SOAKED (FULL LENGTH HOT/COLD TREATMENT) WOOD POLE. POLES SHALL BE 24" DIAMETER, 6' FROM BUTT AND 18.8" AT TOP. 5'-0" MINIMUM EMBEDMENT BELOW FINAL GRADE. COORDINATE FINAL LOCATION IN THE FIELD.
  - PROVIDE AND INSTALL POWERBEAM 5AC GEN2 PBE-RAD-400. CONTACT THE CITY FOR ADDITIONAL INFORMATION, AS REQUIRED, REGARDING THE EXISTING SCADA SYSTEM AND INTEGRATION OF THIS PROJECT
  - PROVIDE AND INSTALL 3#10 THWN CU IN 1" CONDUIT AND EXTEND TO 120V HEAT TRACE EQUIPMENT. CONNECT TO A 20A-1P GFPE CIRCUIT BREAKER. REFER TO SUPPLEMENTAL SPECIFICATION SECTION 15403 FOR ADDITIONAL INFORMATION.

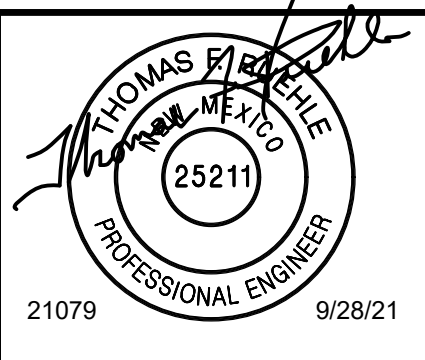


REV. NO.	DATE	DESCRIPTION	APPROVED BY
1	12/1/21	UPDATED SCADA CONTACT INFORMATION	

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 PORTALES, NM

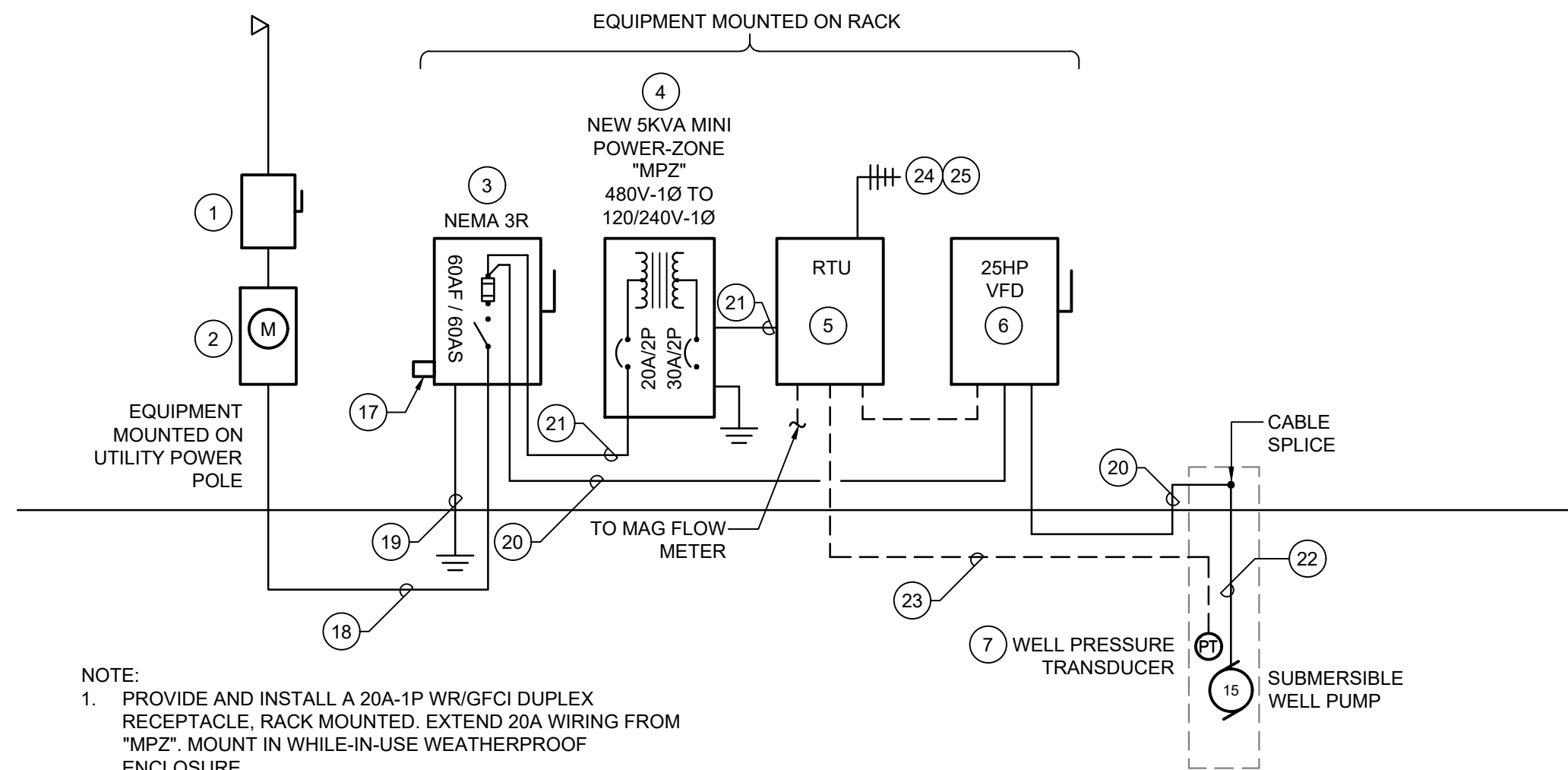
BLACKWATER WELLFIELD  
 EQUIPPING PHASE 2  
 ROOSEVELT COUNTY, NM

WELL 38 AND 39 - SITE PLANS

SHEET 13 OF 15  
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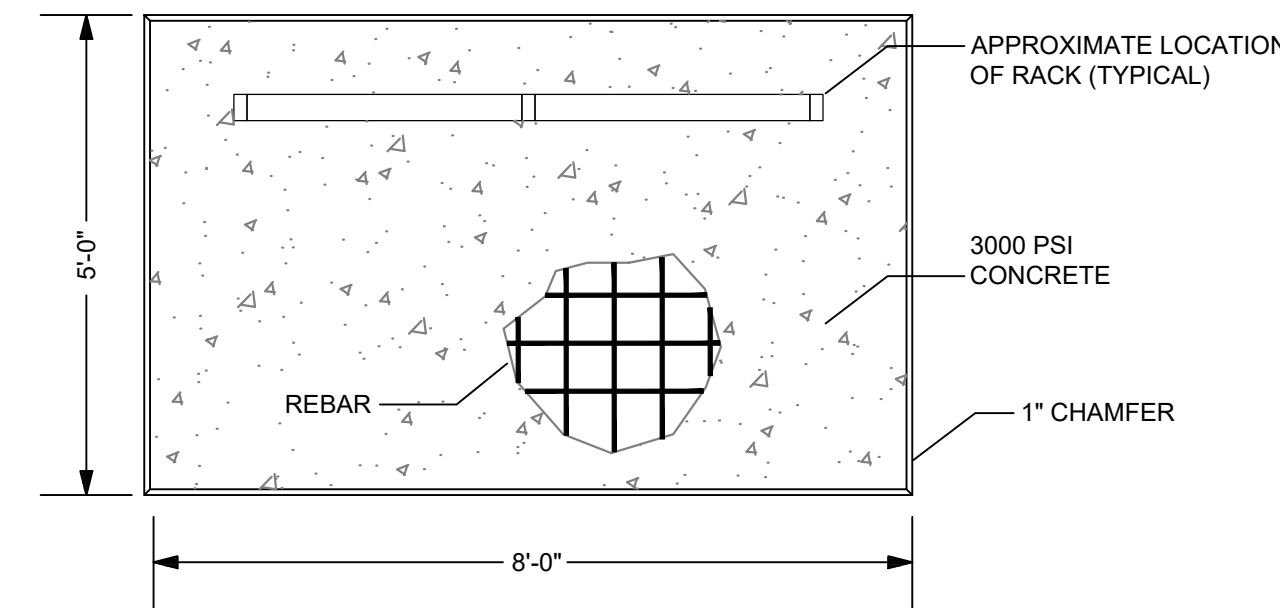


- NOTE:
1. PROVIDE AND INSTALL A 20A-1P WR/GFCI DUPLEX RECEPTACLE, RACK MOUNTED. EXTEND 20A WIRING FROM "MPZ". MOUNT IN WHILE-IN-USE WEATHERPROOF ENCLOSURE.
  2. EXTEND WIRING TO HEAT TRACE EQUIPMENT FROM "MPZ". COORDINATE ROUTING AND LOCATION IN THE FIELD.

TYPICAL POWER RISER DIAGRAM (1)

TYPICAL OF 6 LOCATIONS

SCALE: NONE



PLAN VIEW - RACK DETAIL (15) (16)

SCALE: NOT TO SCALE

GENERAL NOTES:

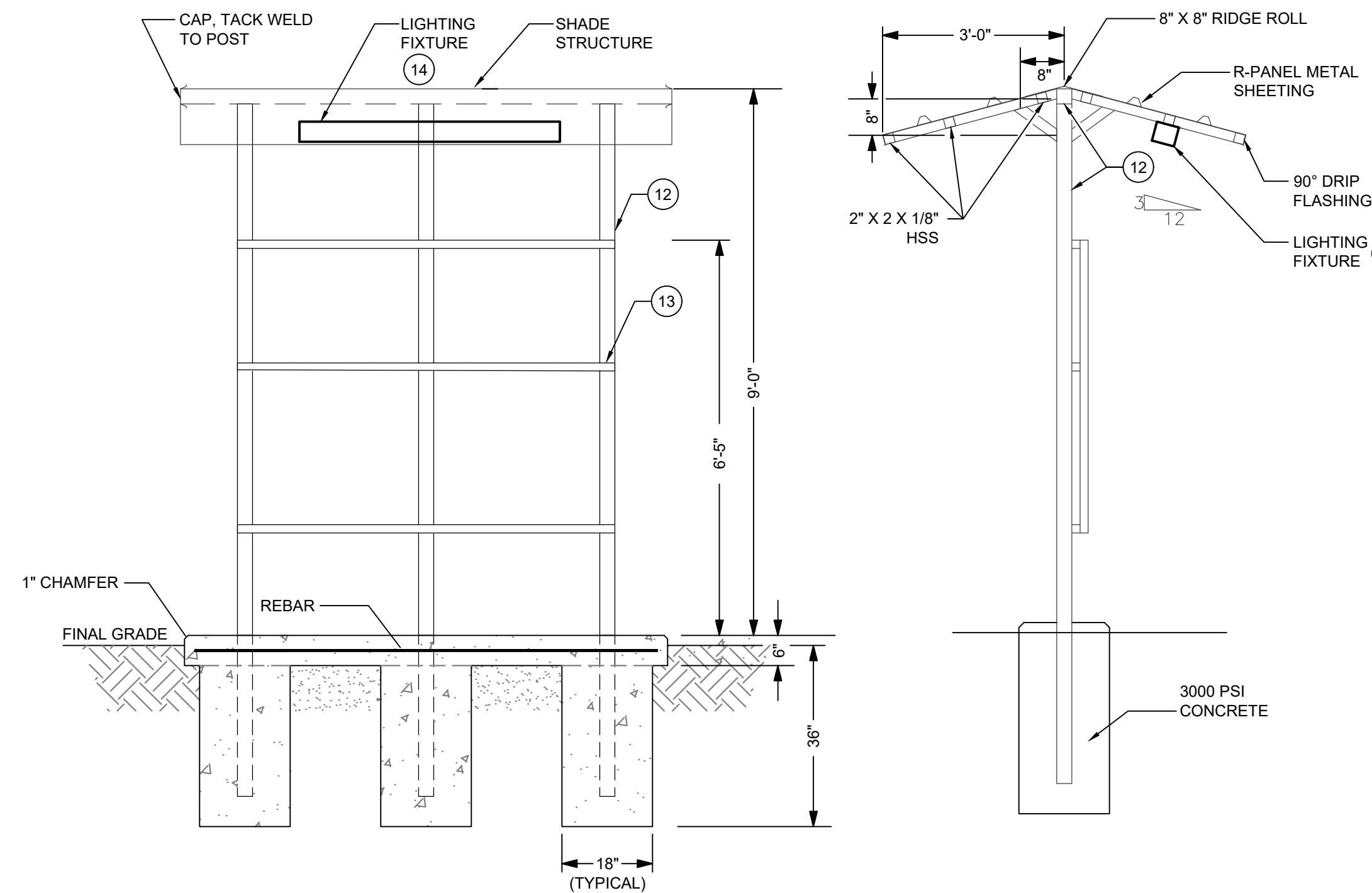
1. EXISTING SERVICE AND ALL ASSOCIATED WIRING AND CONTROLS TO EXISTING WELLS SHALL BE ONLY BE REMOVED AFTER NEW REPLACEMENT WELL IS COMPLETE. COORDINATE WITH CIVIL.
2. ALL CHANGES AND/OR UPGRADES TO PRIMARY WIRING, SECONDARY WIRING, SERVICES, AND METERING SHALL BE COORDINATED WITH LOCAL UTILITY PRIOR TO COMMENCING WORK.

KEY NOTES:

1. PROVIDE AND INSTALL UTILITY DISCONNECT SWITCH. 600V, 60A, 3P.
2. PROVIDE AND INSTALL 200A UTILITY METER PER LOCAL UTILITY REQUIREMENTS.
3. PROVIDE AND INSTALL A 600V, 60A, 3P, HEAVY-DUTY, FUSIBLE DISCONNECT SWITCH IN A NEMA 3R ENCLOSURE. FUSE AT 60A WITH RK5 FUSES. PROVIDE WITH DUAL LUGS ON LOAD, OR PROVIDE AND INSTALL INSULATED TAPS IN WEATHERPROOF ENCLOSURE AS NECESSARY.
4. PROVIDE AND INSTALL A 5KVA MINI POWER-ZONE UNIT SUBSTATION. NEMA 3R, 18,000 AIC RATING. SQUARE D OR ENGINEER APPROVED EQUAL. LOCATION WITHIN 10'-0" OF MAIN DISCONNECT.
5. PROVIDE AND INSTALL AN CONTROL/COMMUNICATIONS CABINET AND ANTENNA. CABINET, PLC, 900 MHZ RADIO, ANALOG/DIGITAL I/O, POWER SUPPLIES, RELAYS, FUSES, BATTERY BACKUP, SURGE PROTECTION, PROGRAMMING, CABLES, WIRING, AND ANTENNA. CONTACT THE CITY FOR ADDITIONAL INFORMATION, AS REQUIRED, REGARDING THE EXISTING SCADA SYSTEM AND INTEGRATION OF THIS PROJECT.
6. PROVIDE AND INSTALL A 25HP VFD FOR USE WITH 15HP SUBMERSIBLE WELL PUMP. VFD OVERSIZED FOR DERATING. DANFOSS VLT AQUA DRIVE: FC-202-P18K-T4-E3R-H2-X-G-X-1-X-X-SXXX-X-AX-BX-CX-X-XX-DX.
7. DOWN WELL PRESSURE TRANSDUCER. CAMPBELL SCIENTIFIC #CRS451 (0-29 PSI) OR OWNER AND ENGINEER APPROVED EQUAL.
8. PROVIDE AND INSTALL UNISTRUT EQUIPMENT RACK. COORDINATE EXACT DIMENSIONS, HEIGHT, LENGTH, AND LOCATION OF ALL EQUIPMENT AS REQUIRED IN THE FIELD PRIOR TO CONSTRUCTING AND INSTALLING.
9. PROVIDE AND INSTALL ALL REQUIRED HARDWARE, SUPPORTS, ETC. AS REQUIRED FOR A COMPLETE EQUIPMENT RACK.
10. PROVIDE AND INSTALL CONCRETE PAD.
11. PROVIDE AND INSTALL CONCRETE BASES.
12. SQUARE HOLLOW STRUCTURAL STEEL. HSS3X3X1/4 STEEL POST, OR APPROVED EQUAL. (TYPICAL)
13. UNISTRUT P1000 OR EATON B-LINE B22 CHANNEL, OR APPROVED EQUAL. PROVIDE ALL NECESSARY MOUNTING HARDWARE AND ACCESSORIES FOR A COMPLETE SYSTEM. (TYPICAL)
14. PROVIDE AND INSTALL A WET LISTED IP67, SURFACE MOUNTED, LINEAR LED LIGHTING FIXTURE; PHOTOCONTROL; AND WEATHERPROOF LIGHTING CONTROL SWITCH. HUBBELL LIGHTING #LXEM4-40WW-RFP-EU OR OWNER AND ENGINEER APPROVED EQUAL. FIXTURE SHALL BE WIRED FOR PHOTOCONTROL WITH MANUAL CONTROL SWITCH. CONTROL SWITCH SHALL BE MOUNTED ON EQUIPMENT RACK, +48" AFF. PROVIDE ALL MOUNTING SUPPORTS AS REQUIRED.
15. CONTRACTOR SHALL PROVIDE AND INSTALL CONCRETE ENCASED-ELECTRODE PER NMEC 250.50. COORDINATE CONNECTION TO REBAR IN THE FIELD.
16. CONTRACTOR SHALL PROVIDE AND INSTALL (2)5/8" X 8'-0" CU OR CU-CLAD GROUNDING ELECTRODE ROD. RODS SHALL BE INSTALLED NO LESS THAN 6'-0" APART.
17. PROVIDE AND INSTALL LIGHTNING SURGE ARRESTOR/SUPPRESSOR. DELTA LA-603 OR ENGINEER APPROVED EQUAL. WIRING PER MANUFACTURER RECOMMENDATIONS.
18. 4#6 THWN-2 CU AND 1#8 CU GROUND IN 1" CONDUIT -OR- 4#4 XHHW-2 AL AND 1#6 AL GROUND IN 1" CONDUIT.
19. GROUNDING PER GROUNDING SYSTEM DIAGRAM.
20. 4#6 THWN-2 CU AND 1#10 CU GROUND IN 1" CONDUIT.
21. 2#10 THWN-2 AND 1#10 CU IN 3/4 CONDUIT.
22. FLAT-JACKETED SUBMERSIBLE PUMP CABLE AS RECOMMENDED BY PUMP SUPPLIER. COORDINATE INSTALLATION IN THE FIELD.
23. EXTEND COMMUNICATION WIRING IN CONDUIT FROM SENSOR TO RTU.
24. EXTEND ANTENNA COXIAL CABLE FROM RTU TO POLE MOUNTED ANTENNA.
25. PROVIDE AND INSTALL GROUNDING FOR POLE MOUNTED ANTENNA.

PANEL: "MPZ" (TYPICAL)		PRI VOLTAGE: 480V-1Ø		PRI BREAKER: 20A/2P		AIC: 18,000		
SOURCE: .		SEC VOLTAGE: 120/240V-1Ø		SEC BREAKER: 30A/2P		MOUNTING: SURFACE		
DESCRIPTION	BRKR	LOAD (VA)	CCT NO.	LOAD (VA)	CCT NO.	LOAD (VA)	BRKR	DESCRIPTION
LIGHTING	20A/1P	50	1	350	2	300	20A/1P	HEAT TRACE (GFPE TYPE)
RACK RECEPTACLE	20A/1P	1500	3	1500	4		20A/1P	SPARE
RTU	20A/1P	500	5	500	6		20A/1P	SPARE
SPARE	20A/1P		7		8		20A/1P	SPARE
SPARE	20A/1P		9		10		20A/1P	SPARE
TOTAL LOAD (VA)		850	1500					
TOTAL CONNECTED (KVA):		2.4	ESTIMATED DEMAND (KVA):					
								NEMA 3R GROUND BUS

LOAD SUMMARY - SERVICE	
DESCRIPTION	
SERVICE ESTIMATED DEMAND PER NEC 220	
MECHANICAL UNITS (17.5 KVA CONN)	21.8 KVA
LARGEST AT 125% (17.5 KVA)	0.0 KVA
REMAINING AT 100% (0.0 KVA)	0.0 KVA
RECEPTACLES (1.5 KVA CONN)	1.5 KVA
FIRST 10 KVA AT 100%	0.0 KVA
REMAINING AT 50%	0.1 KVA
LIGHTING (0.1 KVA CONN) AT 125% (CONTINUOUS LOAD)	1.1 KVA
EQUIPMENT (1.1 KVA CONN) AT 100%	
TOTAL ESTIMATED LOAD:	24.5 KVA
30 AMPERES AT 480Y/277V-3Ø-4W	
∴ MINIMUM RECOMMENDED SERVICE SIZE =	60 AMPS



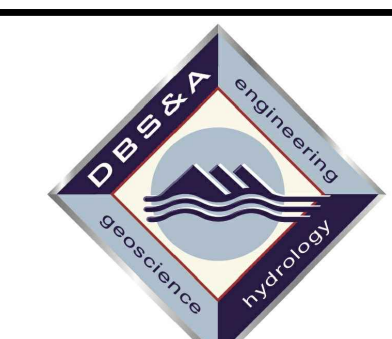
EQUIPMENT RACK DETAIL (8) (9) (10) (11)

SCALE: NOT TO SCALE

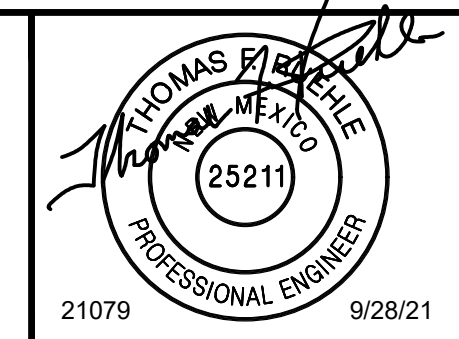
- NOTES:
1. PROVIDE AND INSTALL #4 REBAR 6" ON-CENTER. PROVIDE/MAINTAIN 2" CLEARANCE ALL AROUND. 3" MINIMUM FROM BOTTOM OF PAD.
  2. CONCRETE PAD SHALL BE LEVEL WITHIN ± 1/4" IN 5'-0" AND TROWEL FINISHED TO PROVIDE TRUE PLAN WITHIN 1/16" IN 5'-0" AS DETERMINED BY 5'-0" STRAIGHT EDGE.
  3. EXISTING GRADE AND BACKFILL UNDER CONCRETE PAD SHALL BE COMPACTED TO 95% IN ACCORDANCE TO ASTM D1557.
  4. COORDINATE LOCATION OF ALL STRUCTURE AND CONDUIT PENETRATIONS THROUGH SLAB IN FIELD PRIOR TO INSTALLATION. REFER TO ELECTRICAL EQUIPMENT RACK DETAIL FOR ADDITIONAL INFORMATION.

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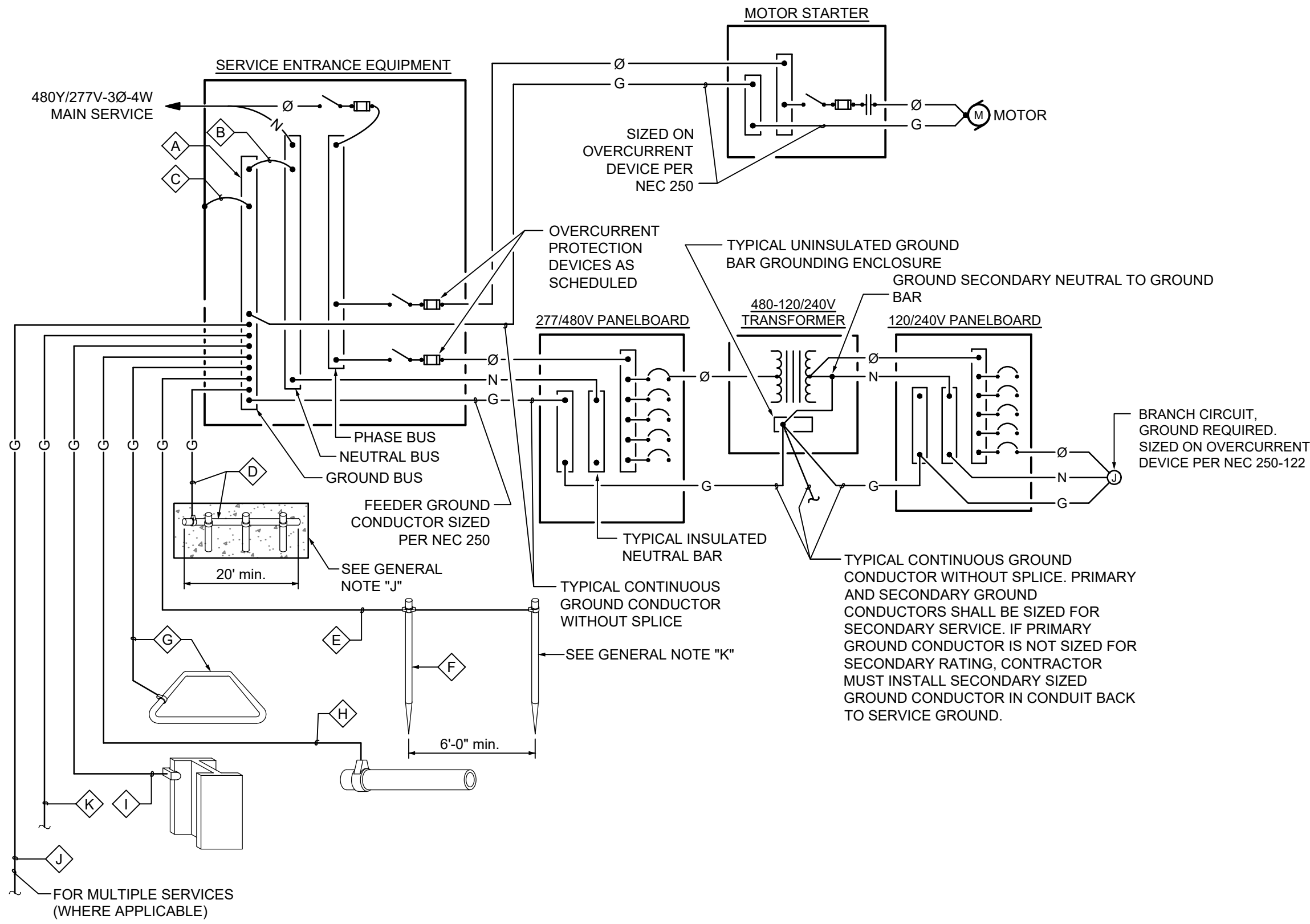
CITY OF PORTALES  
 PORTALES, NM

BLACKWATER WELLFIELD  
 EQUIPPING PHASE 2  
 ROOSEVELT COUNTY, NM  
 ELECTRICAL DETAILS

SHEET 14 OF 15  
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GROUNDING SCHEDULE											
	A	B	C	D	E	F	G	H	I	J	K
	FACTORY INSTALLED GROUND BUS BAR	INTEGRATED BUS BAR MAIN BOND JUMPER	INTEGRATED BUS BAR CASE BOND JUMPER	CONCRETE ENCASED ELECTRODE (UFER)	GROUNDING ELECTRODE CONDUCTOR TO ROD, PIPE OR PLATE	CU or CU-CLAD STEEL GROUND ROD	COPPER GROUND RING CONDUCTOR	METALLIC PIPING BONDING CONDUCTOR	BUILDING STEEL BONDING CONDUCTOR	MULTIPLE SERVICE BONDING CONDUCTOR	TELEPHONE SYSTEM GROUNDING CONDUCTOR
CODE REFERENCE AMPACITY											
200 AMP	#4	#4	#4	#6	5/8"x8"	#2	#4	#4	#4	#6	
225 AMP	#2	#2	#4	#6	5/8"x8"	#2	#2	#2	#2	#6	
400 AMP	#1/0	#1/0	#4	#6	5/8"x8"	#1/0	#1/0	#1/0	#1/0	#6	
600 AMP	#2/0	#2/0	#4	#6	5/8"x8"	#2/0	#2/0	#2/0	#2/0	#6	
800 AMP	#3/0	#3/0	#4	#6	5/8"x8"	#2/0	#2/0	#2/0	#2/0	#6	
1000 AMP	#3/0	#3/0	#4	#6	5/8"x8"	#3/0	#3/0	#3/0	#3/0	#6	
1200 AMP	250kcMIL	250kcMIL	#4	#6	5/8"x8"	#3/0	#3/0	#3/0	#3/0	#6	
1600 AMP	350kcMIL	350kcMIL	#4	#6	5/8"x8"	#3/0	#3/0	#3/0	#3/0	#6	
2000 AMP	400kcMIL	400kcMIL	#4	#6	5/8"x8"	#3/0	#3/0	#3/0	#3/0	#6	
2500 AMP	500kcMIL	500kcMIL	#4	#6	5/8"x8"	#3/0	#3/0	#3/0	#3/0	#6	
3000 AMP	500kcMIL	500kcMIL	#4	#6	5/8"x8"	#3/0	#3/0	#3/0	#3/0	#6	

**GROUNDING SYSTEM DIAGRAM**

NOT TO SCALE

**GROUNDING SYSTEM GENERAL NOTES**

- A. THE GROUNDING ELECTRODE SYSTEM SHALL CONSIST OF ITEMS A, B, C, D, E, F, AND G, WHERE APPLICABLE.
- B. ITEMS H, I, AND J MUST BE BONDED TOGETHER AND TO THE GROUNDING ELECTRODE SYSTEM WHEN THEY ARE PRESENT.
- C. ITEM D, CONCRETE ENCASED ELECTRODE (UFER) SHALL HAVE UFER SUPPORT CONSISTING OF 5/8" x 10' COPPER GROUND ROD CUT INTO 2' SECTIONS AND DRIVEN FOR SUPPORT OF UFER CONDUCTOR. ONLY COPPER TO COPPER CONNECTIONS ARE ACCEPTABLE. DO NOT USE RE-BAR FOR UFER SUPPORT. (THIS IS TO AVOID THE HARMFUL EFFECTS OF DISSIMILAR METALS IN CONTACT.) A U.L. LISTED COPPER TO RE-BAR CLAMP (SUCH AS GRAVES "JONES BOND" SYSTEM) IS AN APPROVED ALTERNATIVE.
- D. THIS DETAIL IS PROVIDED IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE, ARTICLE 250, PERTAINING TO THE "GROUNDING ELECTRODE SYSTEM".
- E. ALL SPLICING AND UNDERGROUND CONNECTIONS SHALL BE ACCOMPLISHED VIA EXOTHERMIC WELD (CAD-WELD) ONLY.
- F. ALL CONDUCTOR SIZING INDICATED ON THE GROUNDING SCHEDULE ARE FOR COPPER CONDUCTORS. ALUMINUM IS NOT PERMITTED.
- G. ANY VARIANCES FROM THIS DIAGRAM AND ASSOCIATED SCHEDULE AND NOTES MUST BE REQUESTED AND APPROVED IN WRITING PRIOR TO INSTALLATION.
- H. ALL INSTALLATIONS SHALL COMPLY WITH THE LATEST ADOPTED EDITION OF N.E.C. ARTICLE 250 (ALL SUBPARAGRAPHS) AND ALL STATE AND LOCAL REQUIREMENTS.
- I. THE GROUNDING SYSTEM SHALL PROVIDE LESS THAN (4) FOUR OHMS RESISTANCE TO GROUND AT THE SERVICE CONNECTION. THE RESULTS SHALL BE VERIFIED BY AN INDEPENDENT TESTING AGENCY VIA GROUND TEST (FALL-OF-POTENTIAL) AND SUBMITTED TO ELECTRICAL ENGINEER UPON COMPLETION OF PROJECT.
- J. IF A 20'-0" LONG (MINIMUM) CONCRETE ENCASED ELECTRODE IS NOT AVAILABLE, CONTRACTOR MAY INSTALL A 20'-0" (MINIMUM) UFER GROUND 30" BELOW GRADE WITH AT LEAST TWO GROUND RODS (ONE AT EACH END).
- K. PROVIDE SECOND GROUND ROD AT LEAST 6'-0" FROM INITIAL GROUND ROD.

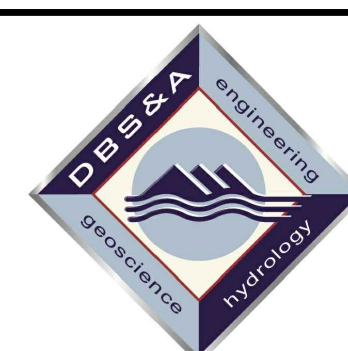
**DISCRETE & ANALOG I/O LIST - WELL (TYPICAL)**

I/O Name	Tag	Point	Type	Local	SCADA	Notes
Mag Meter Totalizer Pulse		DI-1	DI		YES	Pulse
Well Pump in Auto		DI-2	DI		YES	Indicate
Well Pump Running		DI-3	DI		YES	Indicate
Well Pump Fault		DI-4	DI		YES	Indicate
		DI-5	DI		YES	
		DI-6	DI		YES	
		DI-7	DI		YES	
		DI-8	DI		YES	
Well Start		DO-1	DO		YES	
Well Stop		DO-2	DO		YES	
		DO-3	DO			
		DO-4	DO			
Mag Meter		AI-1	AI		YES	Indicate flow (gpm)
Well Pump VFD Speed Indication		AI-2	AI		YES	Indicate Speed (rpm)
Well Pump VFD Speed Control		AI-3	AI		YES	Indicate frequency (Hz)
Well Pressure Transducer		AI-4	AI		YES	Indicate pressure (PSI), Calculate Depth

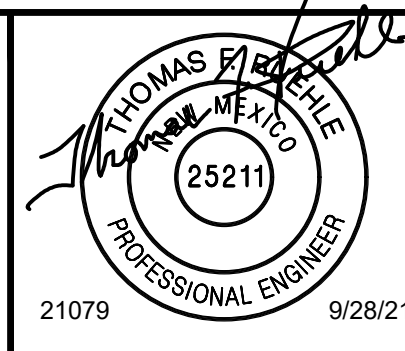
E:\21079 PORTALES WELLS\21079 CADD\CONSTRUCT\ELECTRICAL\E-6 ELECTRICAL DIAGRAMS.DWG December 1, 2021 2:14 PM BY: TOM RUEHLE

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BLACKWATER WELLFIELD  
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ELECTRICAL DETAILS

SHEET 15 OF 15  
 DWG NO. E-6

JOB NO.  
 DB18.1281

Attachment C

Revised  
Specifications

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SECTION 26 00 01

GENERAL ELECTRICAL PROVISIONS

PART 1 GENERAL

1.1 Summary

- A. The general provisions of the Contract, including General Conditions, Supplementary General Conditions (if any) and General Requirements apply to the work specified in this section.

1.2 Electrical Division Index

- A. 23 00 01 General Electrical Provisions
- B. 26 05 26 Grounding and Bonding for Electrical Systems
- C. 26 05 33 Raceways and Boxes for Electrical Systems
- D. 26 05 34 Outlet Boxes
- E. 26 05 83 Wires and Cables
- F. 26 09 16 Relays and Contactors
- G. 26 24 16 Panelboards
- H. 26 27 16 Electrical Cabinets
- I. 26 27 26 Wiring Devices
- J. 26 29 12 Motors
- K. 26 29 13 Motor Starters
- L. 26 29 23 Variable Frequency Drive Systems
- M. 40 61 00 SCADA Telemetry System

1.3 Requirements

- A. Furnish all labor, materials, service, equipment, and appliances required to complete the installation of the complete Electrical System in accordance with the Specifications and Contract Drawings.



#### 1.4 Requirements of Regulatory Agencies and Standards

- A. Regulatory Agencies: Installation, materials, equipment and workmanship shall conform to the applicable provisions of the National Electrical Code (NEC), the National Electrical Safety Code (NESC) and the terms and conditions of the Electrical Utility and other authorities having lawful jurisdiction pertaining to the work required. All modifications required by these codes, rules, regulations and authorities shall be made by the Contractor without additional charge.
- B. Underwriters Laboratories (UL) or Factory Mutual (FM): All materials, appliances, equipment or devices shall conform to the applicable standards of Underwriters Laboratories, Inc. or Factory Mutual, Inc. The label of, or listing by, UL or FM is required.
- C. Standards: Where referenced in these Specifications or on the Drawings, the publications and standards of the following organizations shall apply: American Society of Testing and Materials (ASTM), Insulated Power Cable Engineers Association (IPCEA), National Fire Protection Association (NFPA), American National Standards Institute (ANSI), and National Electrical Manufacturers Association (NEMA).
- D. Conflicting code requirements shall be brought to the attention of the Engineer. Where two or more codes apply, the most stringent of the codes shall govern.

#### 1.5 Submittals and Substitutions

- A. Material List: Within 30 days of Contract Award or Notice to Proceed and before material is ordered, the Contractor shall submit for approval a list of all proposed material and equipment, indicating manufacturer's name and general description.
- B. Shop Drawings: Submit for approval a minimum of six copies of all shop drawings no later than 30 days after the material list has been approved and prior to ordering any material. Show complete outlines, dimensions, electrical services, control diagrams, electrical characteristics of special nature or critical to the installation and pertinent data required for installation. Indicate in the transmittal that submittal has been reviewed and accepted and all Contract deviations identified. In addition to specific references or requests; submit shop drawings for the following applicable items: panelboards, transformers, primary cable and gear, alarm systems and all special equipment.
- C. Substitutions may be requested in accordance with the specification.

### PART 2 PRODUCTS

#### 2.1 Equipment Requirements

- A. The Electrical requirements for equipment specified or indicated on the Drawings are based on information available at the time of design. If equipment furnished for installation has Electrical requirements other than indicated on the Electrical Drawings, the Contractor shall make all adjustments to wire and conduit size, controls, overcurrent

protection and installation as required to accommodate the equipment supplied, without additional charge to the Owner. All adjustments to the Drawings reflecting the Electrical System shall be delineated in a submittal to the Owners Representative immediately upon knowledge of the required adjustments. The complete responsibility and costs for such adjustments shall be assigned to the respective section of these Specifications in which the equipment is furnished.

## 2.2 Materials

- A. All similar materials and equipment shall be the product of the same manufacturer.
- B. Where no specific material, apparatus, or appliance is mentioned, any first-class product made by a reputable manufacturer may be used, providing it conforms to the Contract requirements and meets the approval of the Owners Representative.
- C. Materials and equipment shall be the standard products of manufacturers regularly engaged in the production of such material and shall be the manufacturer's current and standard design.

~~D. All equipment and material that is provided shall meet the Buy American Act.~~

## 2.3 Altitude

- A. Equipment affected by altitude shall perform satisfactorily the function intended at the altitude of the project site.

# PART 3 EXECUTION

## 3.1 General

- A. Fabrication, erection, and installation of the complete Electrical System shall be done in a first class workmanlike manner by qualified personnel experienced in such work and shall proceed in an orderly manner so as not to hold up the progress of the project. The Contractor shall check all areas and surface where Electrical equipment or material is to be installed, removed or relocated and report any unsatisfactory conditions before starting work. Commencement of work signifies this Contractor's acceptance of the prevailing conditions.

## 3.2 Temporary Power and Lighting

- A. Furnish and install all temporary Electrical facilities required for construction and safety operation. No part of the permanent Electrical Systems or the existing Electrical System may be used for temporary service unless approved by the Owners Representative.

## 3.3 Utilities

- A. General: The Drawings reflect requirements of the serving utilities based on information derived from representatives of the utilities.

### 3.4 Excavation

- A. Comply with Earthwork section.

### 3.5 Performance Tests

- A. Thoroughly test all fixtures, services and all circuits for proper operating conditions and freedom from grounds and short circuits before acceptance is requested. All equipment appliances and devices shall be operated under load conditions.
- B. After the interior-wiring system installation is complete and at such time as the Owners Representative may direct, conduct operating tests for approval. When requested, test all the wire, cable, devices and equipment after installation to assure that all material continues to possess all the original characteristics as required by the governing codes and standards as listed in these Specifications.
- C. After substantial completion and after power loads have been established, make voltage readings at all panelboards. Based on these readings make final adjustments of taps on all transformers in the building as directed. Submit to Engineer correspondence and/or drawing delineating readings.
- D. Perform such other tests as required by other sections of these Specifications or as requested by the owner to prove acceptability.
- E. Furnish all instruments and labor for testing.

### 3.6 Operating Instructions And Manuals

- A. Instructions: Without additional charge to the Owner, the Contractor shall provide an experienced and competent representative to instruct the Owner or his representative fully in the concept, theory, operations, adjustment, and maintenance of all equipment furnished for the Electrical System. Contractor shall provide at least two weeks' notice to the Engineer in advance of this period.
- B. Manuals: Upon completion of the work, prepare and deliver to the Owner two sets of complete operating and maintenance manuals for the systems and major equipment installed. Include catalog data, shop drawings, wiring diagrams, performance curves and rating data, spare parts lists and manufacturer's operating and maintenance data. Operating and maintenance manuals as required herein shall be submitted to the Owners Representative for review and distribution to the Owner not less than two weeks prior to the scheduled final acceptance of the Project.
- C. Other: The above requirements are in addition to specific instruction and manuals specified for individual systems or equipment.

### 3.7 Drawings

- A. General: The Electrical Drawings show the general arrangement of all conduit, equipment, etc. and shall be followed as closely as actual building construction and the

work of other trades will permit. The Civil Structural Drawings shall be considered as a part of the work insofar as these Drawings furnish the Contractor with information relating to the design and construction of the building. Civil Drawings shall take precedence over Electrical Drawings. The Contractor shall investigate the civil and finish conditions affecting the work and shall arrange his work accordingly, providing such fittings, elbows, pullboxes, and accessories as may be required to meet such conditions.

- B. Field Measurements: The Contractor shall verify the dimensions governing the Electrical work at the building. No extra compensation shall be claimed or allowed on account of differences between actual dimensions and those indicated on the Drawings.

### 3.8 Location of Equipment and Outlets

- A. The approximate locations of cabinets, panelboards, wiring gutters, switches, light outlets, power outlets, etc., are indicated on the Drawings; however, the exact location shall be determined after thoroughly examining the general building plans and by actual measurements during construction to avoid conflicts with any or other trades with all locations subject to the approval of the Engineer.
- B. Verify all locations of conduit, boxes, etc., stubbed in the floor prior to installation.

### 3.9 Identification and Signs

- A. Mark each individual motor controller, disconnect switch and remote control device to identify each item with its respective service using engraved nameplates.
- B. Provide nameplates with engraved lettering not less than  $\frac{3}{8}$  inch high where specified or noted. In general, use white core laminated plastic, attached with screws. Embossed plastic adhesive tape is not acceptable. Flush mounted devices may have identification engraved in the device plate.
- C. Identify panelboards, transformers and cabinets by engraved nameplates with descriptions indicated on the Drawings together with indication of the location of the feeder overcurrent protection. Install on inside of hinged doors or panelboards and cabinets.
  - 1. Example: Panel 2P
  - 2. 120/208V, 3-phase, 4-wire
  - 3. Fed from Panel MDP/cct. #4
- D. Provide warning signs on all equipment or devices operating at 300 volts or more, reading "DANGER-480 VOLTS," etc. with white letters on red background of standard code size. Signs shall be decals.
- E. All underground utilities indicated on the Drawings shall have a 6-inch-wide plastic marker installed continuously in the trench at 12 inches below grade. The marker shall have continuous markings embossed in the tape identifying the system installed (i.e., communications, telephone, power, and secured computer).



- F. Identify all exposed conduits, junctions, and pullboxes at maximum intervals of twenty feet and as indicated below. Identify exposed conduits according to the system carried by means of Brady #B-350 permacode thin film pipe markers or approved equal by the Owner. Identify junction and pullboxes by painted on stencils or approved labels. Identification shall be placed at necessary intervals on straight conduit runs, close to all terminations, adjacent to all changes in directions and where conduits pass through walls or floors. Stencils to be painted on with legible contrasting colors without abbreviations.
1. Approved Electrical Conduit Color Codes:
    - a. 120/208 Volt Black
    - b. Grounding Green
    - c. 110 Volt Control Black/White
- G. Identify all receptacle and switch devices with the circuit and overcurrent protection device. Identification may be by waterproof, permanent marker on the rear of the device cover plate or as approved by the Owners Representative and Owner.

### 3.10 Warranty

- A. Deliver originals of all guarantees and warranties on this portion of the work to the Owner's Representative. Warrant all equipment, materials, and workmanship for one year in accordance with the terms of the Contract.

### 3.11 Product Handling

- A. Use all means necessary to protect Electrical materials and equipment before, during and after installation and to protect the installed work of other trades.

### 3.12 Record Drawings

- A. As part of this Contract, the Contractor shall provide a complete marked-up set of Contract Documents indicating all changes to the documents during the project construction phase to the Owner's Representative. Changes to the Electrical System shall be documented on a set of Record Drawings on a daily basis.

END OF SECTION

SECTION 32 31 13

CHAIN LINK FENCES AND GATES

PART 1 GENERAL

1.1 Summary

- A. The work covered under this section consists of furnishing all equipment, labor, materials, and incidentals necessary for the complete installation of a chain link fence and accessories, in strict accordance with the applicable drawings, the provisions of ASTM F567 (active standard), and these Technical Provisions..

1.2 General

- A. Fencing and gates shall be constructed to the dimensions and at the locations shown on the drawings.

1.3 Submittals

- A. General: Submit the following items.
- B. Product Data: Submit product data for the following materials and items.
  - 1. Fabric
  - 2. Posts, Post Rails, and Braces
  - 3. Tension Wire
  - 4. Barbed Wire
  - 5. Chain Link Fence Accessories
  - 6. Gates and Accessories
  - 7. Cement Mix for Concrete

PART 2 MATERIALS

2.1 Fence Fabric

- A. Fence Fabric shall be zinc coated steel fabric meeting the requirements of federal Specifications RR-F-191/1C and ASTM A392. Fabric shall be woven in a 2-inch diamond mesh and of height specified on the drawings. The weight of zinc coating shall not be less than 1.2 oz/ft<sup>2</sup>.
  - 1. Wire used in 4-foot fence fabric shall be 11-gauge (0.120-inch diameter) and shall be knuckled on the top and bottom selvage.
  - 2. Wire used in 6-foot and 8-foot fence fabric shall be 9-gauge (0.148-inch diameter) and shall be twisted on the top selvage and knuckled on the bottom selvage. Wire ends shall be cut at an angle.

## 2.2 Tension Wire

- A. Tension wire shall have a marcelled pattern. The wire shall be zinc-coated, galvanized steel wire, 7-gauge (0.177-inch diameter), conforming to ASTM A824.

## 2.3 Barbed Wire

- A. Barbed wire shall be zinc-coated steel barbed wire conforming to ASTM A121. The barbed wire shall be design number 12-4-5-14R: two twisted strands of 12-gauge wire and 4-point, 14-gauge barbs spaced 5 inches on center.

## 2.4 Chain Link Fence Accessories

- A. The following components shall be zinc-coated steel with a minimum zinc coating of 1.2 oz/ft<sup>2</sup>, and galvanized after fabrication, conforming to ASTM F626. Any additional fence accessory not specifically stated shall also meet these requirements unless otherwise approved by the Owner or the Owner's representative.
  1. Post and line caps: Caps shall be designed to fit securely over the outside of the posts and be watertight.
  2. Rail and brace ends: No additional requirements.
  3. Tie wires, clips, and fasteners: No additional requirements. Hog rings shall be included in this category.
  4. Tension and brace bands: No additional requirements.
  5. Tension bars: Tension bars shall have a cross section no less than ¼-inch by ¾-inch. The tension bar shall be of a continuous length and not shorter than 2 inches less than the nominal height of the fabric.
  6. Truss rod assembly: The truss rod assembly shall consist of a steel rod not less than ⅜ inches in diameter and be equipped with a turnbuckle or other equivalent provision for adjustment. The assembly shall be capable of withstanding a tension of 2,000 lb.
  7. Barbed wire arms: Barbed wire arms shall be designed to fit securely over the outside of the post while supporting horizontal braces and be watertight. Arms shall be at an angle of 45 degrees and shall be fitted with clips for attaching three strands of barbed wire. Barbed wire arms shall be of sufficient strength to withstand a weight of 250 lb applied at the outer strand of the barbed wire.

## 2.5 Posts, Post Rails and Braces

- A. All pipe required for construction of the fence and gates shall be round Schedule 40 steel pipe, hot-dip galvanized (interior and exterior), zinc-coated, regular grade (30,000 psi) meeting or exceeding the requirements of ~~ASTM F1083 and~~ ASTM F1043 Group 1A.

Use	Nominal Pipe Size (inches)	Outside Diameter (inches)	Weight (lb/ft)	Fence Industry Trade Reference (inches)
<i>Line Post</i>				
4-foot Fence	1½	1.900	2.72	1⅞
6-foot and 8-foot Fence	2	2.375	3.65	2⅜
Brace rail, Intermediate Rail	1¼	1.660	2.27	1⅝
<i>Gate Frames</i>				
4-foot Fence	1¼	1.660	2.27	1⅝
6-foot and 8-foot Fence	1½	1.900	2.72	1⅞
<i>Terminal, End, Corner &amp; Slope/Pull Posts</i>				
4-foot Fence	2	2.375	3.65	2⅜
6-foot and 8-foot Fence	2½	2.875	5.80	2⅞
<i>Gate Posts</i>				
4-foot Fence				
Gate leaf up to 4 feet	2	2.375	3.65	2⅜
Gate leaf over 4 ft to 10 ft	2½	2.875	5.80	2⅞
Gate leaf over 10 ft to 18 ft	3½	4.000	9.11	4
6-foot and 8-foot Fence				
Gate leaf up to 6 feet	2½	2.875	5.80	2⅞
Gate leaf over 6 ft to 12 ft	3½	4.000	9.11	4
<i>Gate post sizes for gate leaf widths greater than listed shall be as directed by the Owner.</i>				

## 2.6 Gates and Accessories

- A. Swing gates, complete with latches, stops, keepers, hinges, drop bar, and barbed wire, shall be provided where shown on the plans. Swing gates shall conform to ASTM F900.
  1. Gate Frames: Gate Frames shall be Schedule 40 steel pipe.
  2. Gate Fabric: The fabric shall be as specified for the fence as described in this specification.
  3. All gate accessories shall be zinc-coated with a minimum zinc coating of 1.2 oz/ft<sup>2</sup>, galvanized after fabrication, conforming to ASTM F626 and in accordance with tests set forth in ASTM A90.
  
- B. Hinges: Gate Hinges shall be pressed steel or malleable iron. The hinges shall be designed to permit the gate to swing a full 180 degrees. The hinges shall be of adequate strength, with large bearing surfaces for clamping in position and shall not twist or turn under the action of the gate.
  
- C. Latches: Double gate latches shall be a plunger bar arranged to engage the gate stop. Locking devices shall be constructed so that the plunger bar cannot be raised when the gate is locked. The latching device shall have provision for a padlock and shall be designed such that both gate leaves can be locked with a single padlock. Single gate latches may be of the same style, or a forked latch may be provided. Each latch shall be provided with a padlock, Master or equal, and four keys.



- D. Gate Stops: Gate stops shall be provided for all double gates and shall consist of a galvanized, hot-dipped zinc-coated Schedule 40 drop-bar and a receiving gate stop as illustrated on standard details of the construction drawings.
- E. Keepers: Keepers shall be provided for each gate leaf 5 feet in width or more. Gate keepers shall consist of a mechanical device for securing the free end of the gate when in the fully open position.

## 2.7 Concrete

- A. Concrete shall be in conformance with Section 101 of the New Mexico Standard Specifications for Public Work Construction (2006) included with the technical provisions.

## 2.8 Warning Signs

- A. Warning signs shall be prepared and erected to display the information/text/message as shown in the drawings. The size of the warning signs, number of warning signs, and the location of the warning signs shall be manufactured as shown on the construction drawings.
  - 1. The signs shall be constructed of 16-gauge zinc coated steel or 0.105-inch aluminum sheeting. The letters shall be black on white background of a size approved by the Owner or Owner's Representative. The white background shall be hot sprayed with a weather resistant, flexible enamel for enduring appearance. The letters shall be silk screened with sharp clear lines painted with a weather resistant flexible enamel.
  - 2. The signs shall be the product of a company regularly engaged in the manufacture of metal signs.

## PART 3 EXECUTION

### 3.1 General

- A. The fence shall be installed in accordance with ASTM F567 except as modified in these specifications.

### 3.2 Preparation

- A. Prior to commencing all work, the Contractor shall locate all underground utilities and structures. The Contractor shall indicate the location and slope of fence lines, gates and terminal posts for actual construction by staking and shall secure the Owner's approval that such layout is in accordance with the plans. The Contractor shall clear and grade along the fence line only as necessary to provide a uniform clearance between the fence fabric and ground and permit proper installation. The Contractor shall remove existing fence at the work site as directed by the Owner or as indicated on the plans. All ground disturbances shall be filled to match existing grades.

3.3 Post Location

- A. Line posts shall be spaced equidistantly at intervals not exceeding 10 feet. Terminal posts (end, corner, gate and slope/pull posts) shall be set where an abrupt change in alignment or grade of 30 degrees or more occurs or to divide straight runs of fencing which exceed 500 feet in length.

3.4 Post Setting

- A. Set posts in concrete in holes of diameter and depth as shown in the tables below. Posts shall be set in a vertical position, plumb, in line and centered in the footing. Concrete shall be placed 6 inches below the post and shall extend 2 inches above grade and be crowned to shed water. Forms are not required. Fence fabric shall not be stretched until the concrete has cured for at least 7 days. If solid rock or concrete is encountered, the posts shall be set as recommended by the fencing manufacturer and approved by the Owner or Owner’s Representative prior to installation.

1. 4-foot Fence Post Holes:

<b>4-foot Fence Post Holes</b>			
<b>Type of Post</b>	<b>Diameter of Post Hole (inches)</b>	<b>Depth of Post Hole (inches)</b>	<b>Depth of Post in Concrete (inches)</b>
Line Posts (1.900-inch OD)	8	24	18
Terminal Posts (2.375-inch OD)	10	24	18
Gate Posts			
Gate leaf less than 4 feet (2.375-inch OD)	10	36	30
Gate leaf between 4 and 10 ft (2.875-inch OD)	12	36	30
Gate leaf over 10 ft to 18 ft (4.000-inch OD)	16	36	30
<i>Post holes for gate leaves greater than listed shall be as directed by the Owner.</i>			

2. 6-foot and 8-foot Fence Post Holes:

<b>6-foot and 8-foot Fence Post Holes</b>			
<b>Type of Post</b>	<b>Diameter of Post Hole (inches)</b>	<b>Depth of Post Hole (inches)</b>	<b>Depth of Post in Concrete (inches)</b>
Line Posts (2.375-inch OD)	10	30	24
Terminal Posts (2.875-inch OD)	12	30	24
Gate Posts			
Gate leaf less than 6 feet (2.875-inch OD)	12	36	30
Gate leaf over 6 ft to 12 ft (4.000-inch OD)	16	36	30
<i>Post holes for gate leaves greater than listed shall be as directed by the Owner.</i>			

3.5 Post Caps

- A. All posts shall be fitted with watertight caps. Barbed wire arms shall be installed on line posts to perform this function.

### 3.6 Top Rail and Bottom Tension Wire

- A. The top rail shall be supported at each post so that a continuous brace from end-to-end of each stretch of fencing is formed. The top rail shall be securely fastened to the terminal posts and joined with sleeves or couplings. Bottom Tension wires are required and shall be fastened within the bottom 3 inches of the fence fabric. The tension wire shall be securely fastened to all terminal, gate and corner posts. Securely fasten the tension wire to the terminal, corner and gate posts with a brace or stretcher bar band. The tension wire shall be taut and free of sag. After the fabric is stretched, fabric shall be attached to the bottom tension wire with C-rings (Hog-rings) at intervals not exceeding 12 inches. Fence fabric shall be secured to the top rails with tie wire at intervals not exceeding 18 inches.

### 3.7 Bracing

- A. Bracing shall be provided for each terminal, corner and gate post consisting of a brace rail and truss rod assembly. Corner posts shall have bracing assemblies installed in both directions to the next line post. The brace rail shall be installed between the terminal, corner or gate post and the adjacent line post at two-thirds ( $\frac{2}{3}$ ) the height of the fabric. The truss rod assembly shall be installed from the bottom of the terminal, corner or gate post to the brace rail. The truss rod assembly shall be as shown on the plans and shall be finished neatly without undue protrusion of the ends.

### 3.8 Tension Bars

- A. Tension bars shall be threaded through the fabric and attached to the terminal, corner or gate post by brace bands or tension bands at intervals not exceeding 12 inches. Terminal and gate posts shall have one tension bar installed. Corner posts shall have two tension bars installed.

### 3.9 Fence Fabric

- A. Install fence fabric on the outside of the fence and gate assembly framework.
- B. Position the fence fabric 2 inches above ground level. Fasten the fabric to terminal, corner and gate posts with tension bars as specified. Cut the fabric and fasten each span independently at all terminal, corner and gate posts. Secure and apply sufficient tension to remove all slack and provide a smooth uniform appearance before making other attachments. Attach the fence fabric to the bottom tension wires with C-rings (hog rings) at intervals not exceeding 18 inches and to line posts with tie wires at intervals not exceeding 12 inches.
- C. The fence fabric shall be cut by untwisting a picket and attaching each span independently to the terminal post as described. Where the fabric must be spliced, weave a single picket through the end links to form a continuous mesh and form the appropriate selvage at each end.

3.10 Barbed Wire

- A. Where barbed wire is required, barbed wire shall be stretched taut to remove all sag and installed in the slots of the extension arms. Attach each strand of barbed wire to the terminal post using a brace band.

3.11 Fence Fabric Attachment Points

- A. The following table summarizes fence fabric attachment points.

Fence Fabric Attachment to	Attach with	Attachment Spacing (inches)
Terminal Post	Brace Bands & Tension Bar	12
Line Post	Tie wire	
Corner Post	Brace Bands & Tension Bar	
Gate Frame Horizontal member	Tie wire	
Gate Frame Vertical member	Brace Bands & Tension Bar	
Tension Wire	Hog ring	18

3.12 Gates

- A. Swing gates complete with latches, stops, keepers, hinges and barbed wire shall be provided where shown on the plans. Swing gates shall conform to ASTM F900 except as otherwise specified.
  1. Frames shall be made of pipe as specified in this section.
  2. Frames shall be made with corner fittings or welding. Protect welds by applying a zinc-rich paint in accordance with ASTM A780 and the American Galvanizer Association such as Galvax Cold Galvanizing Paint (95% Zinc) or an approved equal. Where corner fittings are used, gates shall have truss rod assemblies even if not otherwise stated. Gate leaf design shall be as stated below. Interior bracing shall be evenly spaced within the frame. Gate leaf sizes that are not encompassed by the following requirements shall be as noted on the plans or as directed by the Owner.
    - a. 4-foot fabric gate leaf of 3- to 4-foot width shall have one diagonal truss rod assembly.
    - b. 6- to 8-foot fabric gate leaf of 3- to 4-foot width shall have one horizontal brace.
    - c. 6- to 8-foot fabric gate leaf of 5- to 8-foot width shall have one horizontal brace, one vertical brace, and one diagonal truss rod assembly.
  3. Where barbed wire is required, the end members of the gate frames shall extend one foot above the top horizontal member to which three strands of barbed wire, uniformly spaced, shall be attached by use of bands or clips.
  4. Fabric shall be attached securely to the gate frame by tension bars, brace bands, and tie wires as specified for fence construction. All fence fabric attachments to gate framing is spaced a maximum of 12 inches.

5. Hinge and latch offset opening space from the gate frame to the gate post shall be no greater than 3 inches in the closed position.
6. Gate stops for double gates shall be set in a concrete footing of minimum 12-inch diameter and 24 inches deep.
7. The gate shall be capable of being opened and closed easily by one person and installed in a manner as to prevent removal of the gate by lifting off.
8. Gates shall swing or slide in the direction indicated in the drawings. Grade clearance and all possible gate obstructions shall be considered to provide adequate operational clearance. Gates shall be true to opening and plumb in a closed position.

### 3.13 Repairs to Coatings

- A. Where galvanized coatings are cut, broken, burned, abraded, or otherwise damaged, affected areas shall be repaired by applying zinc-rich paint in accordance with ASTM Practice A780.

### 3.14 Cleanup

- A. The area of the fence installation shall be left neat and free of any debris caused by the erection of the fence.

END OF SECTION