

# SUBSTATION 3-6 ELECTRICAL UPGRADES ROCK RIVER WATER RECLAMATION DISTRICT CIP NO. 2023



**SYSTEMS DESIGN SERVICE**  
engineering

3600 EAST STATE STREET SUITE 215  
ROCKFORD, ILLINOIS 61108

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## BOARD OF TRUSTEES

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TIMOTHY S. HANSON, DISTRICT DIRECTOR  
CHRISTOPHER T. BAER, P.E., ENGINEERING MANAGER

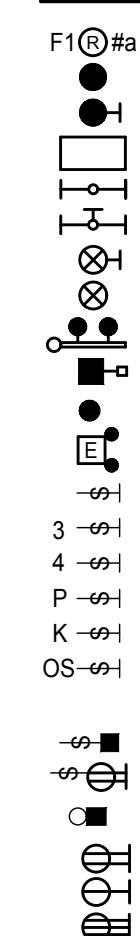
## CONSTRUCTION PHASING

- PHASE 1: SITE PREPARATION AND DUCT BANK
- PHASE 2: INSTALLATION AND TESTING
- PHASE 3: POWER CUTOVER
- PHASE 4: DEMOLITION AND SITE RESTORATION

## GENERAL NOTES:

1. CONTRACTOR MAY MAKE REQUIRED CHANGES FROM THE GENERAL ROUTING SHOWN ON THESE DRAWINGS SUCH AS OFFSETS, BENDS OR CHANGES IN ELEVATION IN ORDER TO COORDINATION OF EXISTING CONDITIONS AND THE EXISTING BUILDING CONSTRUCTION. CONTRACTOR IS ALLOWED TO MAKE MINOR CHANGES TO THE PIPING TO AVOID FIELD CONFLICTS AT NO ADDITIONAL COST TO THE OWNER AND AS LONG AS THE RELOCATION DOES NOT AFFECT THE PERFORMANCE OF THE SYSTEM. OWNER APPROVAL IS REQUIRED OF ANY ADJUSTMENTS TO ENSURE COMPATIBILITY WITH FUTURE SYSTEM CONDITIONS. FOR PRESENT CONSTRUCTION, VERIFY ALL EXISTING CONDITIONS PRIOR TO BIDDING TO AVOID CONFLICT. PERFORM SCANNING, POTHOLING, OR OTHER MEANS OF LOCATING SUBSURFACE FEATURES IN THE AREA WHERE WORK WILL BE PERFORMED TO AVOID CONFLICT. IT IS INTENDED THAT ALL EQUIPMENT, MATERIAL, DEVICES, ETC., SHALL BE LOCATED SYMMETRICALLY, NOTWITHSTANDING THE FACT THAT LOCATIONS INDICATED BY THESE DRAWINGS MAY BE DISTORTED FOR CLARNESS OF PRESENTATION. SEE CONTRACT GENERAL CONDITIONS.
2. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CUTTING AND PATCHING, INCLUDING CORE DRILLING, SAW CUTTING, CUTTING AND PATCHING ETC., AS REQUIRED TO ACCOMMODATE WORK. CONTRACTOR SHALL BE RESPONSIBLE FOR THE REMOVAL AND REPLACEMENT OF PRESENT CEILINGS, LIGHT FIXTURES, DIFFUSERS, DUCTWORK, PIPING, CONDUIT, ETC., AS REQUIRED FOR THE WORK.
3. ELECTRICAL DESIGNS ARE BASED ON THE REQUIREMENTS FOR THE SPECIFIED EQUIPMENT FROM SQUARE D, CONDUITS, DISCONNECTS, BREAKERS, FUSES, AND WIRE SIZES ARE SELECTED ON THE BASIS OF SPECIFIED SQUARE D EQUIPMENT. INCREASED CURRENT REQUIREMENTS NECESSITATING LARGER WIRE, BREAKERS, FUSES, SWITCHES, ETC., TO ACCOMMODATE SPECIFIED ALTERNATE MANUFACTURERS' EQUIPMENT OTHER THAN AS SHOWN ON DRAWINGS OR SCHEDULES SHALL BE PROVIDED WITHOUT INCREASE IN CONTRACT PRICE BY THE CONTRACTOR FURNISHING EQUIPMENT. WIRE SIZES ARE SELECTED ON THE BASIS OF SPECIFIED EQUIPMENT.
4. CONTRACTOR SHALL PROVIDE ALL CONDUIT OFFSETS TO AVOID INTERFERENCES WITH EXISTING PIPING, JOISTS, EQUIPMENT, LIGHTS, ETC.
5. REPAIR ALL EXISTING WALLS, FLOORS, AND CEILINGS DISTURBED DURING CONSTRUCTION. PRESENT PAINTED CONSTRUCTION WHICH IS MARRED SHALL BE REPAINTED TO MATCH EXISTING AND SUFFIXES.
6. SEE SPECIFICATIONS FOR ADDITIONAL NOTES, SYMBOLS, ABBREVIATIONS, PREFIXES AND SUFFIXES.
7. ALL UTILITY OUTAGES SHALL BE COORDINATED WITH WARREN ADAM (815) 871-0787 PROVIDE A MINIMUM OF 48 HOURS ADVANCE NOTICE PRIOR TO ANY SERVICE INTERRUPTION DURING THE ENTIRE PERIOD OF THE CONTRACT. PROVIDE RESTORATION OF ANY UNSCHEDULED POWER INTERRUPTION WITHIN 30 MINUTES DURING REGULAR BUSINESS HOURS, AND WITHIN 2 HOURS AT NIGHT AND ON WEEKENDS.
8. ALL LANDSCAPING, GRASS, SPECIALTY GRASS IN DITCH AREAS, PAVEMENT ETC., DISTURBED DURING CONSTRUCTION SHALL BE RESTORED TO ORIGINAL PRE-CONSTRUCTION CONDITION.

## ELECTRICAL SYMBOLS

	<p>RECESSED CEILING FIXTURE (I)=WALL WASHER) SURFACE OR PENDANT CEILING FIXTURE BRACKET FIXTURE</p> <p>RECESSED FLUORESCENT FIXTURE SURFACE OR PENDANT FLUORESCENT FIXTURE WALL FLUORESCENT FIXTURE (VERIFY HEIGHT) BRACKET EXIT LIGHT CEILING EXIT LIGHT LIGHT TRACK EXTERIOR POLE FIXTURE BOLLARD FIXTURE BATTERY EMERGENCY FIXTURE (R=REMOTE HEAD) SINGLE POLE SWITCH THREE WAY SWITCH FOUR WAY SWITCH SWITCH WITH PILOT LIGHT KEY OPERATED SWITCH OCCUPANCY SENSOR SWITCH (EQUAL TO LEVITON DECORA INFRARED ODS16-ID UNO) DIMMER CONTROL SWITCH SWITCH WITH GROUNDED DUPLEX RECEPTACLE REMOTE CONTROL SWITCH GROUNDED DUPLEX RECEPTACLE GROUNDED SINGLE RECEPTACLE SPECIAL GROUNDED RECEPTACLE. SIZE AND TYPE AS SPECIFIED GROUNDED FLUSH FLOOR RECEPTACLE PLUGMOLD (VERIFY TYPE AND MOUNTING) POWER, DATA AND TELEPHONE FLUSH FLOOR BOX WITH COVER PROVIDE EMPTY CONDUIT FOR DATA/TELEPHONE TO ABOVE SUSPENDED CEILING AS REQUIRED. (SEE LOW VOLTAGE CONDUIT SIZING TABLE. (VERIFY) OUTLET WITH FINAL CONNECTIONS TO EQUIPMENT. EQUIPMENT FURNISHED BY OTHERS (FBO). PROVIDE NECESSARY RECEPTACLE, SAFETY SWITCH, WIRING ETC. FOR COMPLETE INSTALLATION. VERIFY EXACT LOCATION AND HEIGHT BEFORE ROUGH-IN. CIRCUIT BREAKER DRAWOUT CIRCUIT BREAKER CURRENT TRANSFORMER PULL BOX OVERCURRENT PROTECTIVE DEVICE KEY LOCK CEILING JUNCTION BOX WALL JUNCTION BOX SAFETY SWITCH (F=FUSED) SURFACE ELECTRICAL PANELBOARD RECESSED ELECTRICAL PANELBOARD CUSTOMER METERING DEVICE CONTROL RELAY (LETTER-FLOOR, NUMBER-NO. OF RELAY) TRANSFORMER CONDUIT RUN CONCEALED (OR PARTIALLY CONCEALED) IN CEILINGS OR WALLS CONDUIT RUN CONCEALED IN OR UNDER FLOORS CONDUIT RUN (EMBEDDED) IN STRAIGHT LINES CONDUIT RUN UNDERGROUND EMERGENCY WIRING, IN CONDUIT, CONCEALED HOMERUN TO PANEL, IN CONDUIT, CONCEALED ARROWS INDICATE NUMBER OF CIRCUITS TELEPHONE CONDUIT RUN ABOVE CEILINGS OR IN WALLS TELEPHONE CONDUIT RUN IN OR UNDER FLOORS SWITCHGEAR COMMUNICATIONS GATEWAY</p>	<p>NUMBER=CIRCUIT LETTER=SWITCH F1 F2 F3=FIXTURE SEE SPECIFICATIONS AND FIXTURE SCHEDULE</p> <p>UP 4'-0", UNLESS NOTED OTHERWISE</p> <p>CHARACTER MARKS= NUMBER OF WIRES, IF NONE ARE SHOWN TWO ARE REQUIRED</p> <p>EMPTY CONDUIT, CONCEALED</p>
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## NOTES:

- ELECTRICAL OUTLET BOXES INSTALLED IN FIRE RATED ASSEMBLIES SHALL COMPLY WITH 2008 IBC, SECTION 712 (NOT LESS THAN 24" O.C.)
- ELECTRICAL DEVICES INSTALLED IN ACCORDANCE WITH ADA SPECIFICATIONS. VERIFY HEIGHTS AND SPECIFICATIONS.
- ELECTRICAL CONTRACTOR SHALL PROVIDE ALL NECESSARY LIGHTING CONTROLS AS TO COMPLY WITH LOCAL ENERGY CODE REQUIREMENTS. ENERGY MANAGEMENT PRODUCTS SHALL BE EQUAL TO SENSORSWITCH, E.C. TO DETERMINE IF WALL OR CEILING OCCUPANCY DEVICE TYPE IS REQUIRED BASED ON PROJECT DESIGN AND IDEAL USE OF DEVICE. PROVIDE CONTROL DEVICE WITH SUITABLE FEATURES FOR INSTALLATION LOCATIONS OF THE CONTROL DEVICES REQUIRED FOR ENERGY CODE COMPLIANCE.

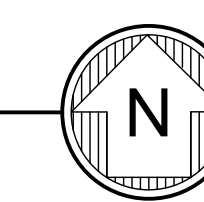
## ELECTRICAL ABBREVIATIONS

A	ARC FLASH REDUCTION	IWS	IN WALL SPACE
AC	ABOVE COUNTER	JB	JUNCTION BOX
AF	ABOVE FINISHED FLOOR	KVA	KILO VOLT-AMPS
ASC	ABOVE SUSPENDED CEILING	KW	KILOWATTS
AWG	AMERICAN WIRE GAUGE	LSIA	LONG, SHORT, INSTANTANEOUS, ALARM
C	CONDUIT	LSIG	LONG, SHORT, INSTANTANEOUS, GROUND
CF	CARPET FLANGE	LTG	LIGHTING
CTC	CLOSE TO CEILING	MAX	MAXIMUM
CTF	CLOSE TO FLOOR	MCC	MOTOR CONTROL CENTER
CTW	CLOSE TO WALL	MFG	MANUFACTURER
CU	COPPER	MIN	MINIMUM
DSB	DIMMER SWITCH BOARD	MOB	MOTOR OUTLET BOX
E	EMERGENCY	MTD	MOUNTED
EBBC	ELECTRIC BASEBOARD CONVECTOR	MV	MERCURY VAPOR
EDH	ELECTRIC DUCT HEATER	NEC	NATIONAL ELECTRICAL CODE
EMC	ELECTRIC MOTORIZED CONVECTOR	NL	NIGHT LIGHT
EMH	ELECTRICAL MANHOLE	OS	OCCUPANCY SENSING DEVICE
ESUH	ELECTRIC SUSPENDED UNIT HEATER	PB	PULLBOX
EWC	ELECTRIC WATER COOLER	PH	PHASE (Ø)
EW	ELECTRIC WATER HEATER	PNL	PANEL
FAAP	FIRE ALARM ANNUNCIATOR PANEL	SB	SWITCHBOARD
FACP	FIRE ALARM CONTROL PANEL	SPD	SURGE PROTECTION DEVICE
FBO	FURNISHED BY OTHERS	SW	SWITCH
FL	FLUORESCENT	SWGR	SWITCHGEAR
FFA	FROM FLOOR ABOVE	TFA	TO FLOOR ABOVE
FFB	FROM FLOOR BELOW	TFB	TO FLOOR BELOW
FLA	FULL LOAD AMPS	TTC	TELEPHONE TERMINAL CABINET
GFI	GROUND FAULT INTERRUPTER	UFER	CONCRETE ENCASED ELECTRODE
GFP	GROUND FAULT PROTECTION	UNO	UNLESS NOTED OTHERWISE
HP	HORSEPOWER	V	VOLTS
INC	INCANDESCENT	W	WIRE
		WP	WEATHER PROOF



## PROJECT LOCATION

NO SCALE




## PRESENT EQUIPMENT AND DEMOLITION NOTES

- A. WORK SHALL BE COORDINATED SO THAT HEATING, PLUMBING, ELECTRICAL, AND TELEPHONE SERVICES TO THE PRESENT BUILDING SHALL NOT BE INTERRUPTED, EXCEPT AS APPROVED BY THE DISTRICT OPERATIONS STAFF.
- B. REMOVED PIPE MUST NOT BE REUSED, AND SHALL REMAIN PROPERTY OF THE DISTRICT.
- C. ANY OF ABOVE EQUIPMENT WHICH IS NOT REUSED AND FOLLOWING REMOVED PRESENT EQUIPMENT SHALL BECOME PROPERTY OF CONTRACTOR, AND SHALL BE REMOVED FROM PREMISES BY HIM (PX).
- D. CONTRACTOR SHALL:
  1. EQUIPMENT SO DESIGNATED ON DRAWINGS.
  2. PROVIDE NEW FLOORS UNDER REMOVED PRESENT EQUIPMENT AND WHERE CALLED FOR CONSTRUCTION.
  3. CAP CHASSES WHICH ARE NO LONGER REQUIRED AND NEATLY PATCH TO MATCH ADJACENT CONSTRUCTION.
  4. CUT OPENINGS REQUIRED FOR:
    - A. HIS WORK.
    - B. ADMISSION OF NEW EQUIPMENT;
    - C. REMOVAL OF PRESENT EQUIPMENT;
    - D. NEW CONNECTION TO PRESENT CONSTRUCTION.
  5. PATCH AND REPAIR UNUSED PRESENT HOLES AND OPENINGS, AND THOSE LEFT BY THE REMOVAL OF PRESENT EQUIPMENT AND ADMISSION OF NEW EQUIPMENT.
  6. PATCH AND REPAIR PRESENT EQUIPMENT, AND BUILDING CONSTRUCTION WHICH HAS NOT BEEN CUT, REMOVED, DISTURBED OR MARRED, AS REQUIRED, TO RESTORE IT TO ORIGINAL CONDITION BEFORE BEING DISTURBED.
- E. UNUSED OPENINGS IN ENCLOSURES, IN CONDUITS, BOXES, CABINETS, AND PANELS SHALL BE CAPPED.
- F. PRESENT PAINTED CONSTRUCTION WHICH IS MARRED SHALL BE REPAIRED SAME AS NEW CONSTRUCTION.
- G. CERTAIN ABBREVIATIONS OR SYMBOLS, WHEN APPLIED TO PRESENT (TO EXISTING) LINE, DEVICE OR EQUIPMENT, SHALL HAVE THE FOLLOWING MEANINGS.
 

<b>NC</b>	NEW CONNECTIONS TO PRESENT PIPING, DEVICE WIRING, EQUIPMENT, ETC. INSTALL, TEST, COVER, PAINT, ETC., SAME AS NEW WORK.
<b>E</b>	TO REMAIN UNCHANGED, IF CHANGE CANNOT BE AVOIDED DUE TO CONTRACTOR CONVENIENCE CHANGE "P" TO PXR. AT NO INCREASE IN CONTRACT PRICE.
<b>PX</b>	TO BE COMPLETELY REMOVED, INCLUDING UNNEEDED CONNECTIONS, PIPING, DUCTS, WIRING, BASES, ETC., OF EVERY KIND. UNUSED OPENINGS PLUGGED OR CAPPED, TESTED, COVERED, PAINTED SAME AS NEW WORK. OTHER DISTURBED WORK OF EVERY KIND RESTORED, PATCHED, TESTED, COVERED, PAINTED, ETC., TO EQUAL ORIGINAL CONDITION. REMOVED MATERIAL MUST NOT BE REUSED UNLESS OTHERWISE SPECIFIED OR DIRECTED BY ENGINEER.
<b>PX-DO</b>	SAME AS "PX" EXCEPT REMOVED, CLEANED AND RESTORED INTACT, AS FAR AS PRACTICAL, MATCHED MARKED, AND OTHERWISE IDENTIFIED AS REQUIRED AND DELIVERED AS INDICATED AND DIRECTED BY THE DISTRICT OPERATIONS.
- H. WORK SHALL BE COORDINATED WITH ALL OTHER WORK AND PRESENT CONDITIONS, SO THAT:
  1. ELECTRICAL SERVICES TO PRESENT BUILDINGS OR PORTIONS OF BUILDING WILL NOT BE INTERRUPTED DURING PERIODS WHEN THOSE SERVICES ARE NEEDED.
  2. SPECIAL SYSTEMS SUCH AS FIRE ALARM, SOUND, ETC., OF EVERY KIND TO PRESENT BUILDINGS WILL NOT BE INTERRUPTED DURING WORKING AND/OR OCCUPIED HOURS, EXCEPT AS APPROVED BY WARREN ADAM (815) 871-0787.
- I. NEW CONDUIT SERVING NEW AND/OR PRESENT ELECTRICAL DEVICES IN FINISHED PRESENT ROOMS OR SPACES SHALL BE CONCEALED IN FINISHED ROOMS, WHERE POSSIBLE OR SHALL BE RUN IN ADJOINING UNFINISHED ROOMS, SHAFTS, CHAMBERS, ETC., WHERE EXPOSED CONDUIT IS PERMITTED IN FINISHED PRESENT ROOMS BY OWNER IN WRITING. IT SHALL BE WIREMOLD, WITH MATCHING BOXES, RUN UNCONSPICUOUSLY AS POSSIBLE, IN STRAIGHT LINES, PARALLEL TO WALLS AND CEILINGS, WITH NEAT BENDS, UNNEEDED BOXES, SWITCHES AND WIRING SHALL BE COMPLETELY REMOVED AND OPENINGS PATCHED. PRESENT FIXTURES, BOXES, WIRING, SWITCHES, ETC. SHALL BE REMOVED AS NOTED UNLESS ANOTHER DISPOSITION IS SHOWN ON DRAWINGS. WHERE SPECIFICALLY APPROVED BY THE DISTRICT OPERATIONS IN WRITING, BOXES MAY BE PERMITTED TO REMAIN AND BE PROVIDED WITH NEAT FLUSH COVERS, EXTENDING OVER ENTIRE WALL OPENING.
- J. UNNEEDED ELECTRICAL FIXTURES, SWITCHES, STARTERS, DEVICES, ETC., SHALL BE COMPLETELY REMOVED; AND CONSTRUCTION PATCHED. NEW CONNECTIONS TO PRESENT EQUIPMENT, SHALL BE MADE, TESTED, COVERED, PAINTED, ETC. SAME AS NEW EQUIPMENT. PRESENT EQUIPMENT, AND OTHER COVERING DISTURBED BY CONTRACTOR SHALL BE REPAIRED TO EQUAL NEW CONDITION AND PAINTED SAME AS NEW COVERING.
- K. WHERE DEVICES ARE OMITTED FROM PRESENT BRANCH CIRCUITS, THE REMAINING DEVICES, ON THE SAME CIRCUIT AND/OR CONDUIT RUN, SHALL BE REWIRED, IF NEEDED AND AS REQUIRED, TO REMAIN ON THEIR RESPECTIVE CIRCUITS AND IN OPERATING CONDITION.

No.	Description	Date
1	DRAFT	3/12/19
2	OWNER REVIEW	4/30/19
3	FINAL REVIEW	5/17/19
4	ISSUED FOR CONST.	5/28/19



SCOTT JAY BAIER  
620-59748

SIGNATURE  
DATE  
LICENSE EXPIRES 9-30-2048

## COVER SHEET

Project Number RRWRD 2023 (SDSE 19-006)

Date 28 MAY 2019

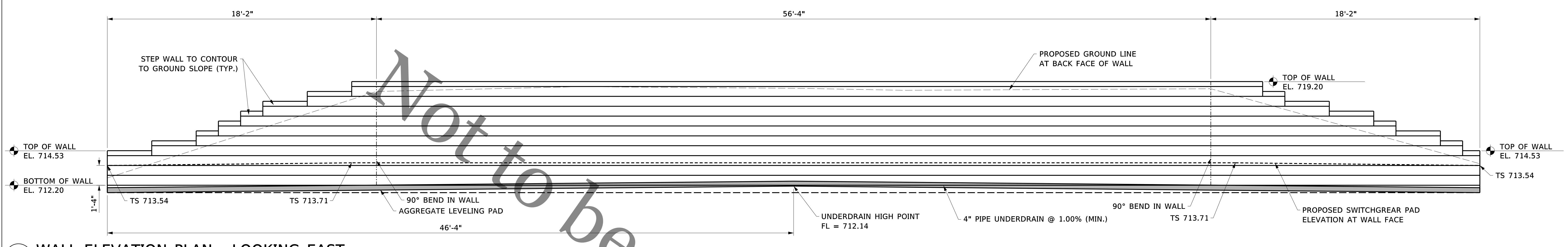
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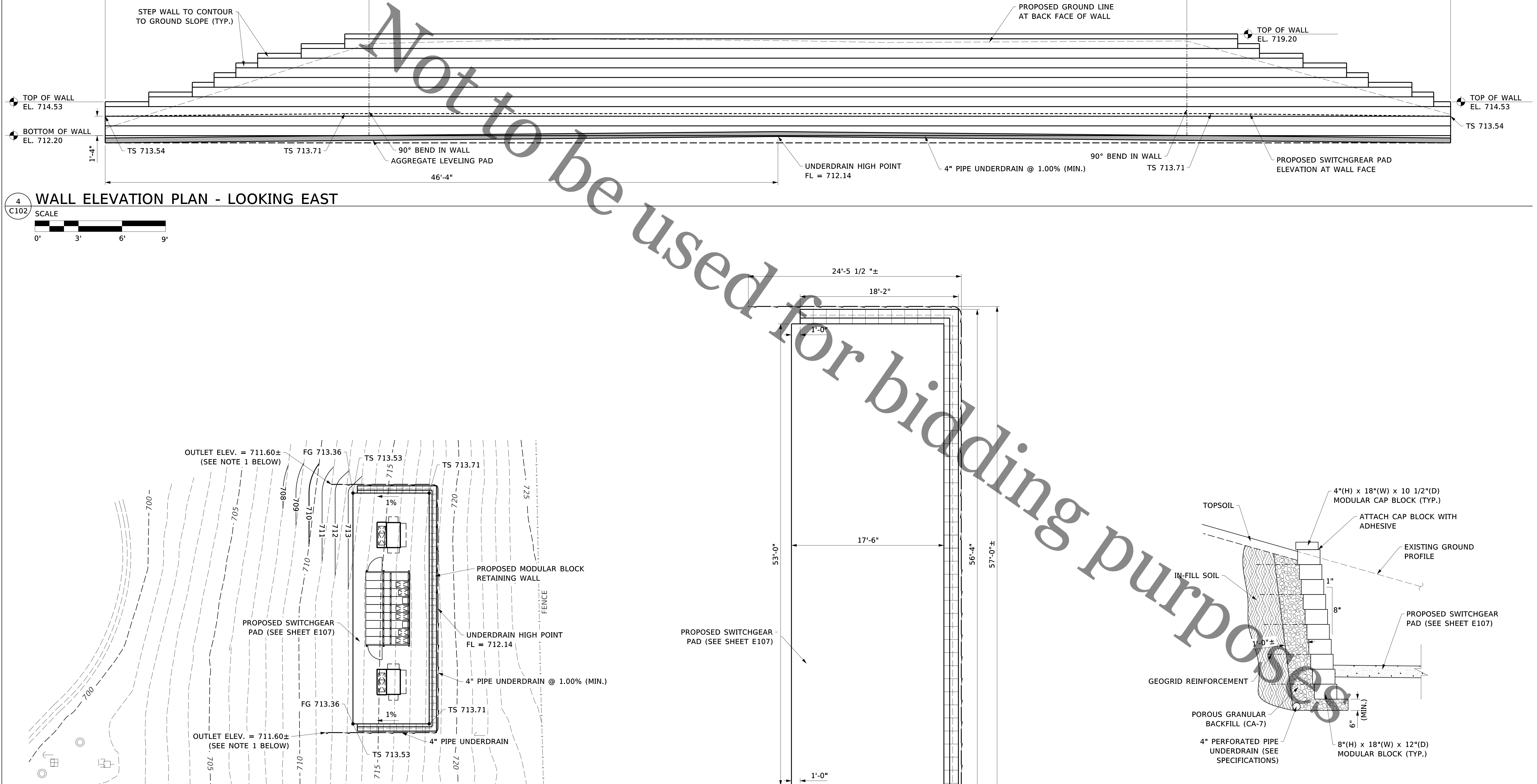
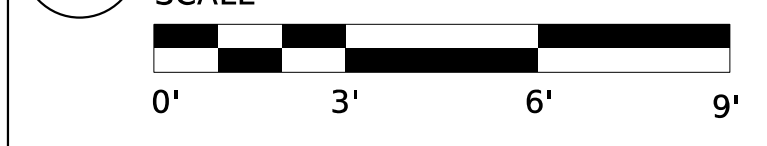
# C101

Scale NO SCALE

**SUBSTATION 3-6  
ELECTRICAL UPGRADES  
CIP NO. 2023**  
Rock River Water Reclamation District  
3333 Kishwaukee St.  
Rockford, Illinois 61109



4 WALL ELEVATION PLAN - LOOKING EAST



**LEGEND**  
FG = FINISHED GRADE  
TS = TOP OF SLAB

**NOTES:**  
1. EACH OUTFALL SHALL BE PROVIDED WITH A METAL, FINGER STYLE RODENT/TRASH GUARD MANUFACTURED BY THE SAME MANUFACTURER AS THE UNDERDRAIN PIPE.

**NOTES:**  
1. CONTRACTOR SHALL PROVIDE A WALL DESIGN AND OPTIONS FOR COLORS, TEXTURES, ETC. TO THE OWNER FOR APPROVAL PRIOR TO INSTALLATION.  
2. NUMBER, LENGTH, AND SPACING OF GEOGRID REINFORCEMENT SHALL BE BASED ON THE WALL DESIGN PROVIDED TO THE OWNER.

1 GRADING PLAN  
SCALE 0' 10' 20' 30'

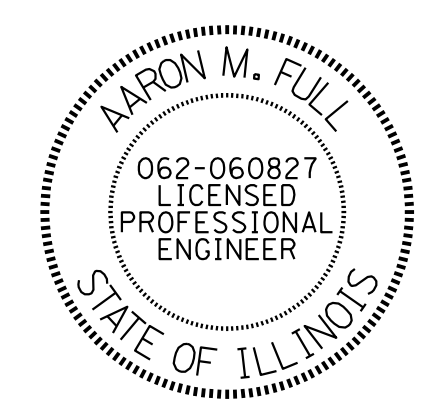


2 DIMENSIONAL PLAN  
SCALE 0' 5' 10' 15'



3 TYPICAL RETAINING WALL SECTION  
NOT TO SCALE

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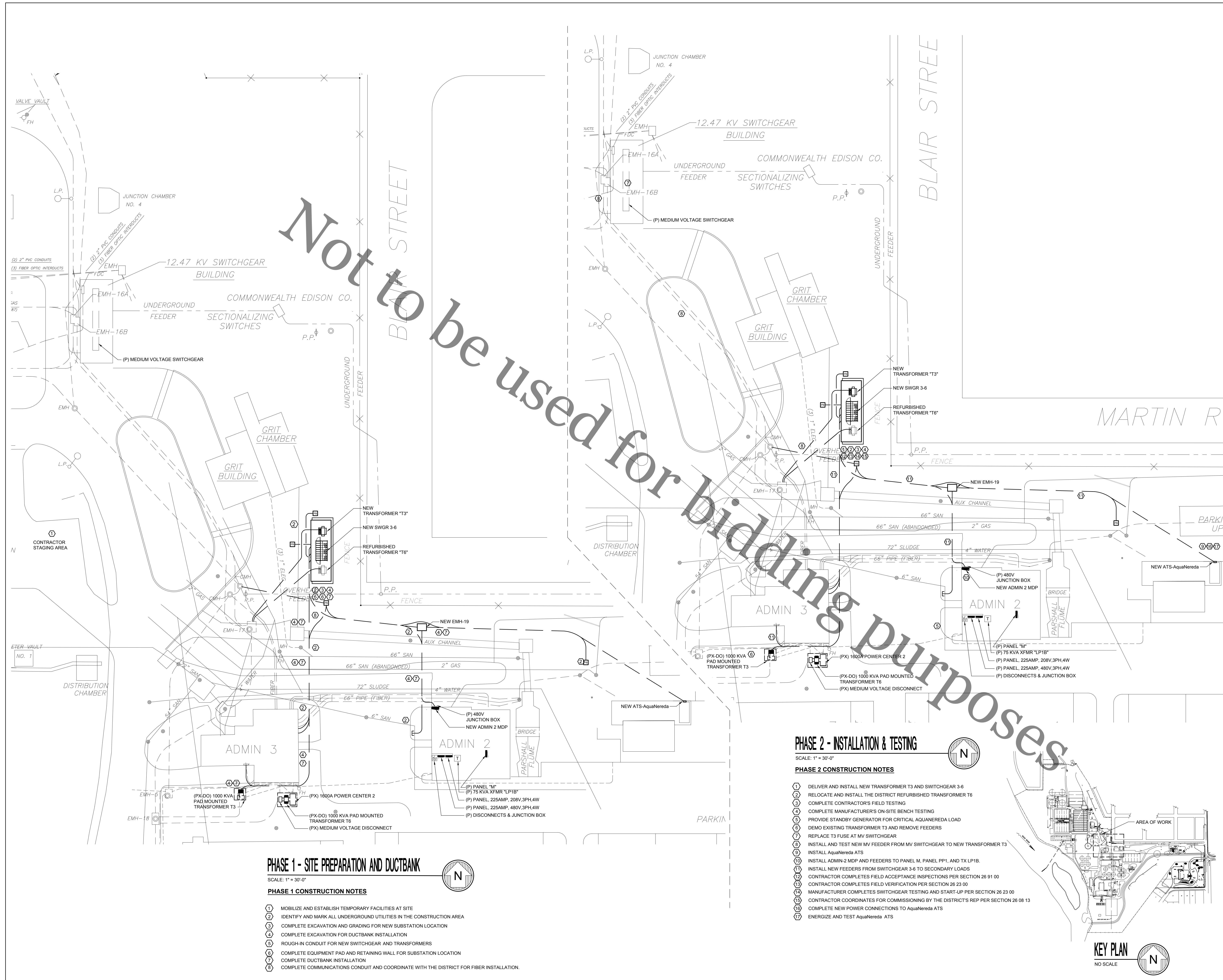
DATE: \_\_\_\_\_  
EXPIRES 11/30/19

**SWITCHGEAR PAD  
SITE PLAN AND  
RETAINING WALL DETAILS**

Project Number	RRWRD 2023 (SDSE 19-006)
Date	28 MAY 2019
Drawn By	SDS
Checked By	SDSE

**C102**

Scale SEE PLAN



Not to be used for bidding purposes

**PHASE 1 - SITE PREPARATION AND DUCTBANK**

SCALE: 1" = 30'-0"

**PHASE 1 CONSTRUCTION NOTES**

- 1 MOBILIZE AND ESTABLISH TEMPORARY FACILITIES AT SITE
- 2 IDENTIFY AND MARK ALL UNDERGROUND UTILITIES IN THE CONSTRUCTION AREA
- 3 COMPLETE EXCAVATION AND GRADING FOR NEW SUBSTATION LOCATION
- 4 COMPLETE EXCAVATION FOR DUCTBANK INSTALLATION
- 5 ROUGH-IN CONDUIT FOR NEW SWITCHGEAR AND TRANSFORMERS
- 6 COMPLETE EQUIPMENT PAD AND RETAINING WALL FOR SUBSTATION LOCATION
- 7 COMPLETE DUCTBANK INSTALLATION
- 8 COMPLETE COMMUNICATIONS CONDUIT AND COORDINATE WITH THE DISTRICT FOR FIBER INSTALLATION.

**PHASE 2 - INSTALLATION & TESTING**

SCALE: 1" = 30'-0"

**PHASE 2 CONSTRUCTION NOTES**

- 1 DELIVER AND INSTALL NEW TRANSFORMER T3 AND SWITCHGEAR 3-6
- 2 RELOCATE AND INSTALL THE DISTRICT REFURBISHED TRANSFORMER T6
- 3 COMPLETE CONTRACTOR'S FIELD TESTING
- 4 COMPLETE MANUFACTURER'S ON-SITE BENCH TESTING
- 5 PROVIDE STANDBY GENERATOR FOR CRITICAL AQUANEREDA LOAD
- 6 DEMO EXISTING TRANSFORMER T3 AND REMOVE FEEDERS
- 7 REPLACE T3 FUSE AT MV SWITCHGEAR
- 8 INSTALL AND TEST NEW MV FEEDER FROM MV SWITCHGEAR TO NEW TRANSFORMER T3
- 9 INSTALL AquaNereda ATS
- 10 INSTALL ADMIN-2 MDP AND FEEDERS TO PANEL M, PANEL PP1, AND TX LP1B
- 11 INSTALL NEW FEEDERS FROM SWITCHGEAR 3-6 TO SECONDARY LOADS
- 12 CONTRACTOR COMPLETES FIELD ACCEPTANCE INSPECTIONS PER SECTION 26 91 00
- 13 CONTRACTOR COMPLETES FIELD VERIFICATION PER SECTION 26 23 00
- 14 MANUFACTURER COMPLETES SWITCHGEAR TESTING AND START-UP PER SECTION 26 23 00
- 15 CONTRACTOR COORDINATES FOR COMMISSIONING BY THE DISTRICT'S REP PER SECTION 26 08 13
- 16 COMPLETE NEW POWER CONNECTIONS TO AquaNereda ATS
- 17 ENERGIZE AND TEST AquaNereda ATS

**KEY PLAN**  
NO SCALE



**SYSTEMS DESIGN SERVICE**  
engineering

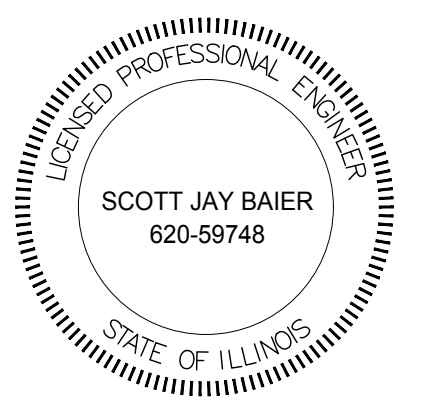
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**CONSTRUCTION PHASING PLAN 1 & 2**

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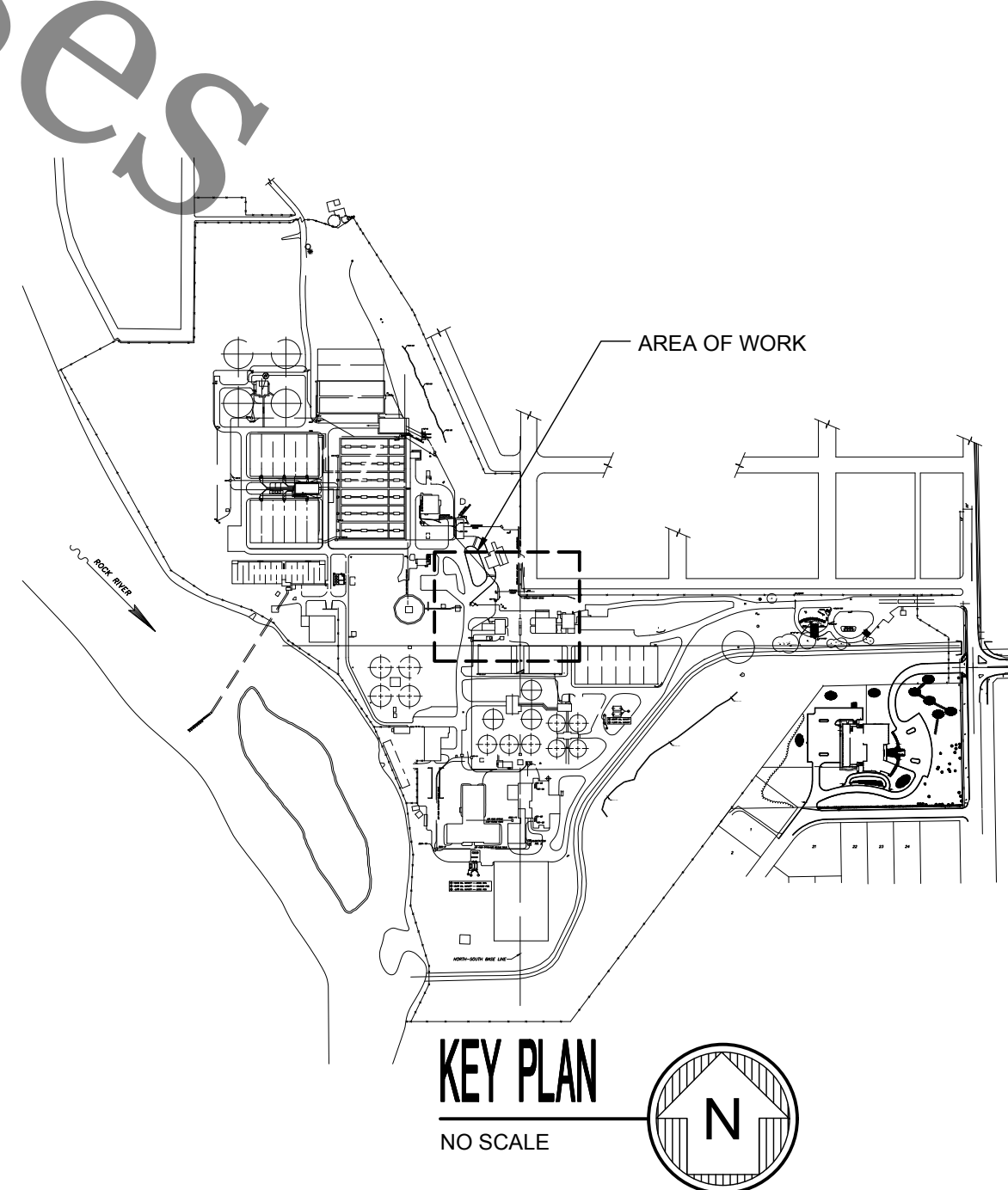
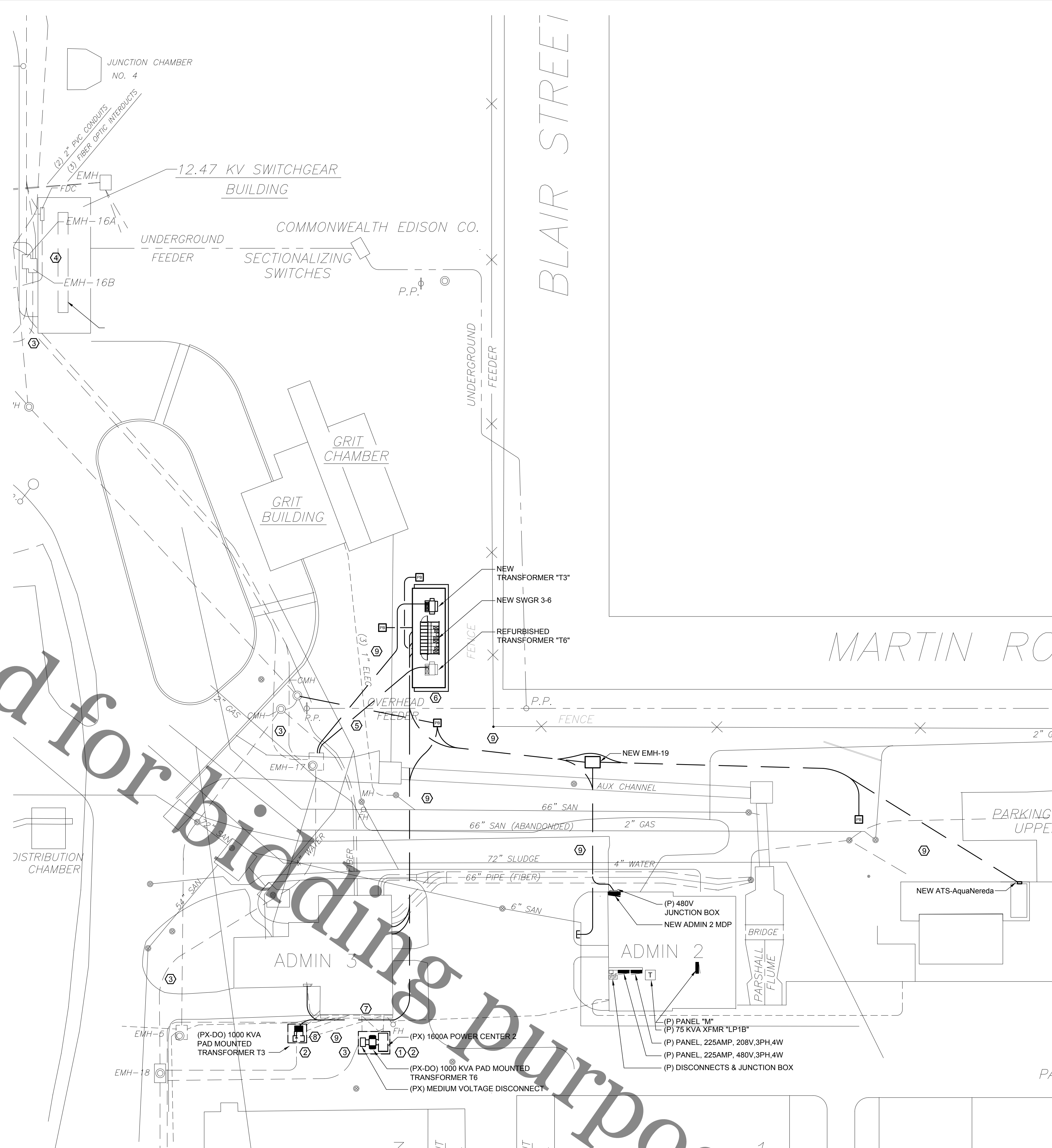
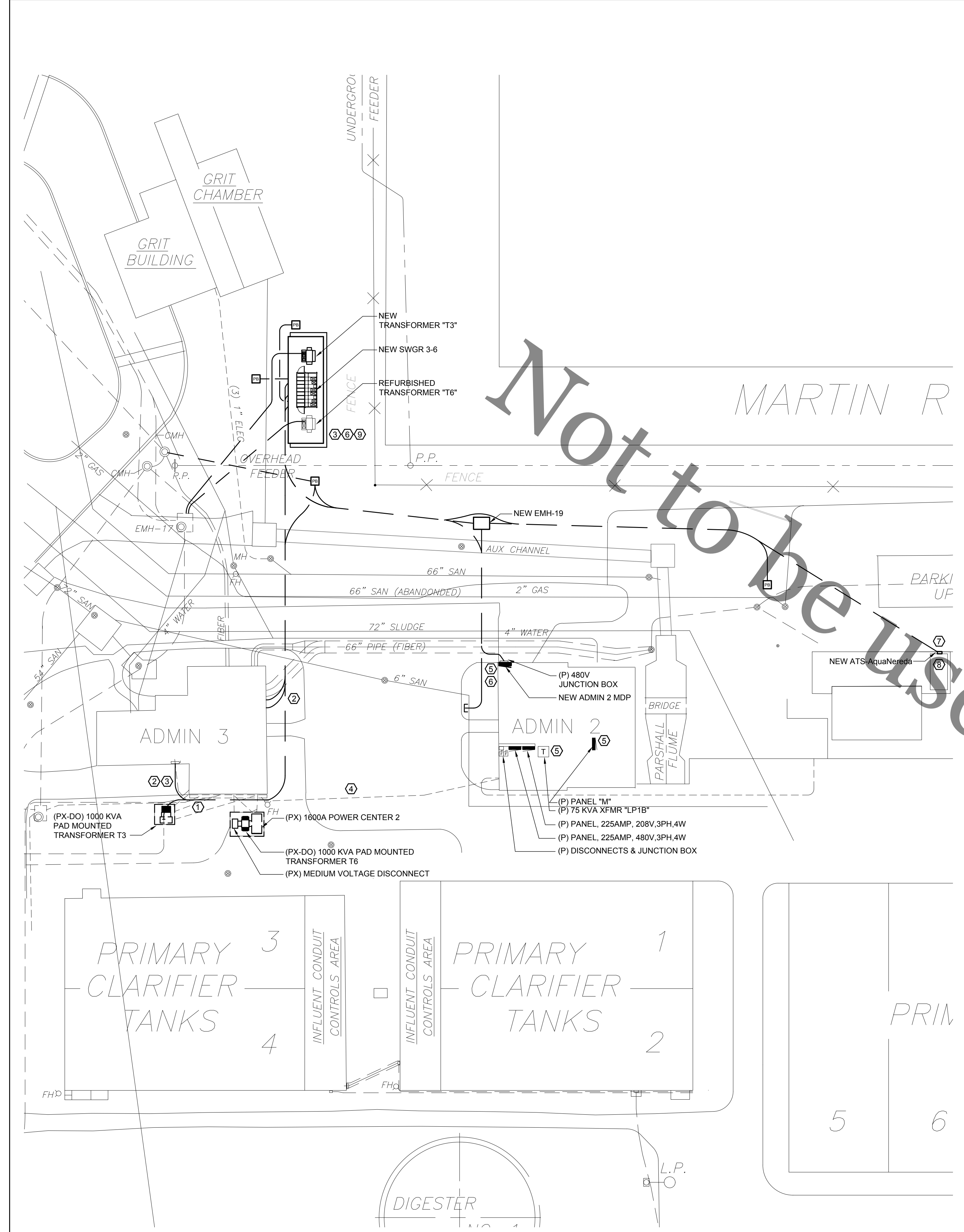
Date 28 MAY 2019

Drawn By SDS

Checked By SDSE

**E101**

Scale 1" = 30'-0"



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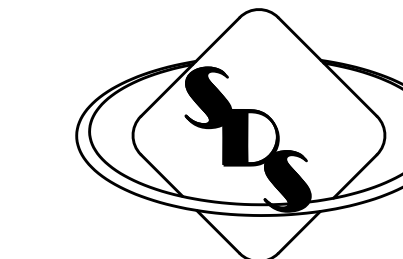
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**CONSTRUCTION PHASING PLAN 3 & 4**

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**E102**  
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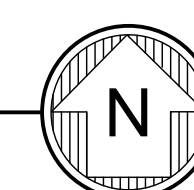
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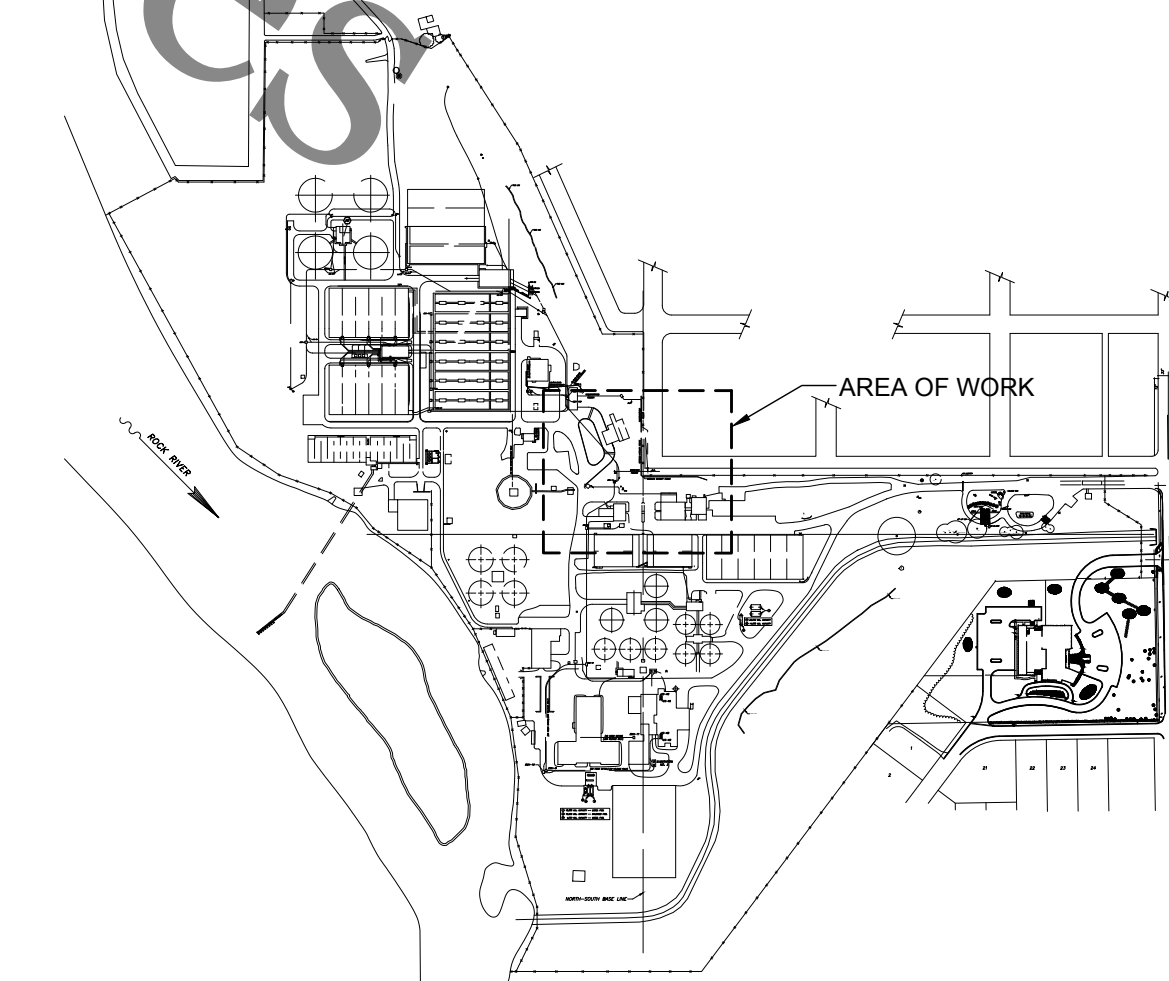
**DEMOLITION SITE PLAN - ELECTRICAL**

SCALE: 1" = 30'-0"



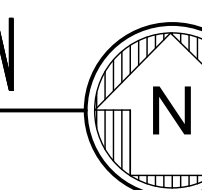
**KEY NOTES FOR THIS SHEET**

1. REMOVE (PX) FEEDER FROM PAD MOUNTED TRANSFORMER T3 TO MV SWITCHGEAR. (PHASE 1)
2. REMOVE (PX) FEEDER FROM PAD MOUNTED TRANSFORMER T6 TO MV SWITCHGEAR. (PHASE 3)
3. REMOVE (PX) FEEDER FROM POWER CENTER 2 TO ADMINISTRATION BUILDING 2 EXTERIOR PANELBOARD. (PHASE 3)
4. REMOVE (PX) ASSOCIATED JUNCTION BOX AND CONDUITS LOCATED ADJACENT TO PANEL BEING REMOVED. (PHASE 3)

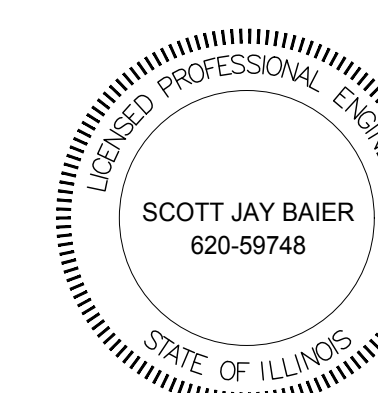


**KEY PLAN**

NO SCALE



No.	Description	Date
1	DRAFT	3/12/19
2	OWNER REVIEW	4/30/19
3	FINAL REVIEW	5/17/19
4	ISSUED FOR CONST.	5/28/19



SIGNATURE  
DATE  
LICENSE EXPIRES 9-30-2019

**SITE PLAN  
ELECTRICAL  
DEMOLITION**

Project Number RRWRD 2023 (SDSE 19-006)

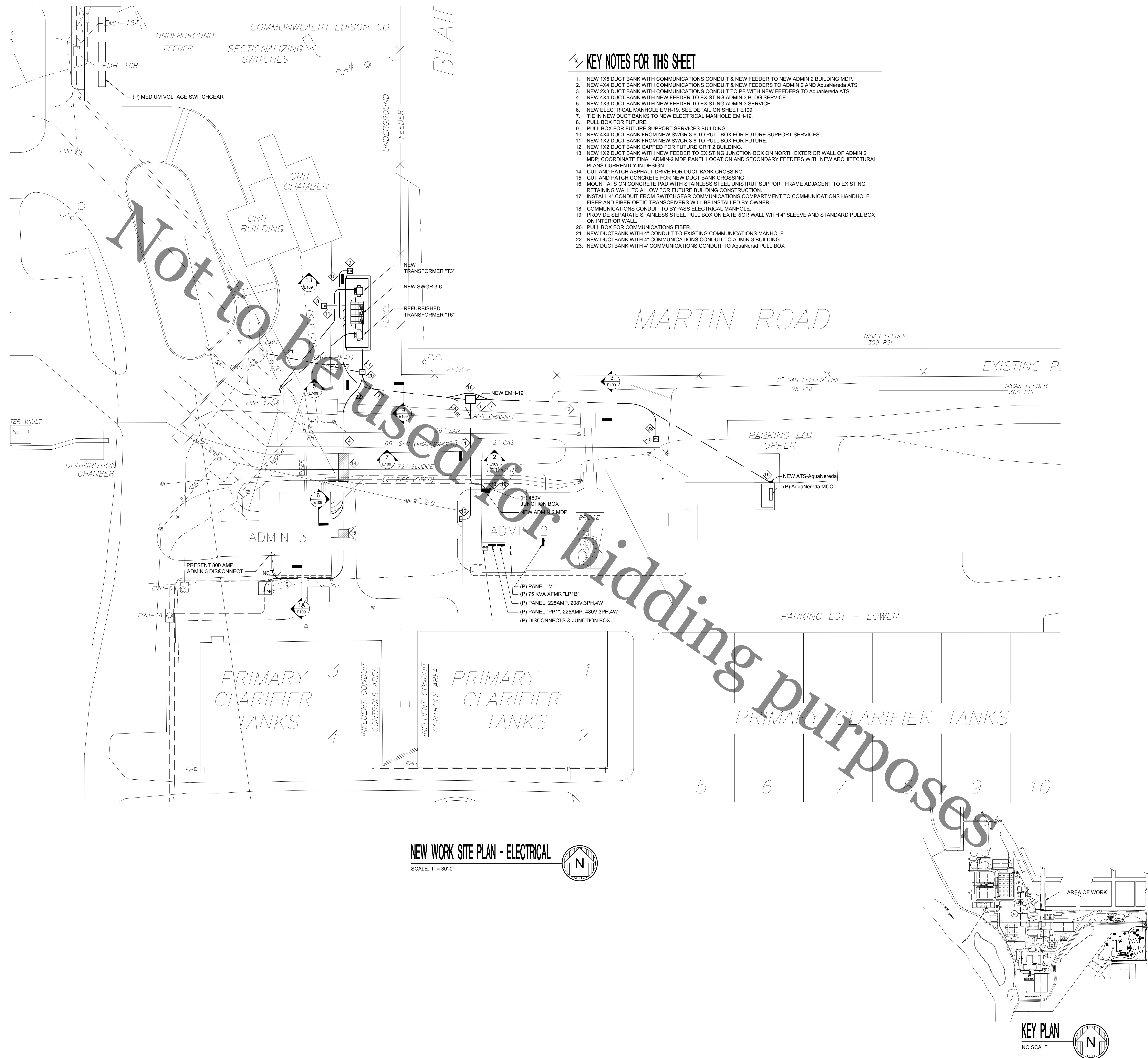
Date 28 MAY 2019

Drawn By SDS

Checked By SDSE

**E103**

Scale 1" = 30'-0"



**KEY NOTES FOR THIS SHEET**

1. NEW 1X5 DUCT BANK WITH COMMUNICATIONS CONDUIT & NEW FEEDER TO NEW ADMIN 2 BUILDING MDP.
2. NEW 4X4 DUCT BANK WITH COMMUNICATIONS CONDUIT & NEW FEEDERS TO ADMIN 2 AND AquaNereda ATS.
3. NEW 2X3 DUCT BANK WITH COMMUNICATIONS CONDUIT TO PB WITH NEW FEEDERS TO AquaNereda ATS.
4. NEW 4X4 DUCT BANK WITH NEW FEEDER TO EXISTING ADMIN 3 BLDG SERVICE.
5. NEW 1X3 DUCT BANK WITH NEW FEEDER TO EXISTING ADMIN 3 SERVICE.
6. NEW ELECTRICAL MANHOLE EMH-19. SEE DETAIL ON SHEET E109
7. TIE IN NEW DUCT BANKS TO NEW ELECTRICAL MANHOLE EMH-19.
8. PULL BOX FOR FUTURE.
9. PULL BOX FOR FUTURE SUPPORT SERVICES BUILDING.
10. NEW 4X4 DUCT BANK FROM NEW SWGR 3-6 TO PULL BOX FOR FUTURE SUPPORT SERVICES.
11. NEW 1X2 DUCT BANK FROM NEW SWGR 3-6 TO PULL BOX FOR FUTURE.
12. NEW 1X2 DUCT BANK CAPPED FOR FUTURE GRIT 2 BUILDING.
13. NEW 1X2 DUCT BANK WITH NEW FEEDER TO EXISTING JUNCTION BOX ON NORTH EXTERIOR WALL OF ADMIN 2 MDP. COORDINATE FINAL ADMIN 2 MDP PANEL LOCATION AND SECONDARY FEEDERS WITH NEW ARCHITECTURAL PLANS CURRENTLY IN DESIGN.
14. CUT AND PATCH ASPHALT DRIVE FOR DUCT BANK CROSSING.
15. CUT AND PATCH CONCRETE FOR NEW DUCT BANK CROSSING.
16. MOUNT ATS ON CONCRETE PAD WITH STAINLESS STEEL UNISTRUT SUPPORT FRAME ADJACENT TO EXISTING RETAINING WALL TO ALLOW FOR FUTURE BUILDING CONSTRUCTION.
17. INSTALL 4" CONDUIT FROM SWITCHGEAR COMMUNICATIONS COMPARTMENT TO COMMUNICATIONS HANDHOLE. FIBER AND FIBER OPTIC TRANSCEIVERS WILL BE INSTALLED BY OWNER.
18. COMMUNICATIONS CONDUIT TO BYPASS ELECTRICAL MANHOLE.
19. PROVIDE SEPARATE STAINLESS STEEL PULL BOX ON EXTERIOR WALL WITH 4" SLEEVE AND STANDARD PULL BOX ON INTERIOR WALL.
20. PULL BOX FOR COMMUNICATIONS FIBER.
21. NEW DUCTBANK WITH 4" CONDUIT TO EXISTING COMMUNICATIONS MANHOLE.
22. NEW DUCTBANK WITH 4" COMMUNICATIONS CONDUIT TO ADMIN 3 BUILDING
23. NEW DUCTBANK WITH 4" COMMUNICATIONS CONDUIT TO AquaNereda PULL BOX

**NEW WORK SITE PLAN - ELECTRICAL**  
SCALE: 1" = 30'-0"

**SYSTEMS DESIGN SERVICE**  
engineering

3600 EAST STATE STREET SUITE 215  
ROCKFORD, ILLINOIS 61108

PHONE (815) 399-3381 FAX (815) 399-3383  
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**SUBSTATION 3-6  
ELECTRICAL UPGRADES  
CIP NO. 2023**

Rock River Water Reclamation District  
3333 Kishwaukee St.  
Rockford, Illinois 61109

No.	Description	Date
1	DRAFT	3/12/19
2	OWNER REVIEW	4/30/19
3	FINAL REVIEW	5/17/19
4	ISSUED FOR CONST.	5/28/19

SCOTT JAY BAIER  
620-59748  
STATE OF ILLINOIS  
LICENSED PROFESSIONAL ENGINEER

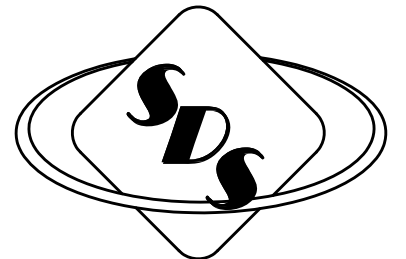
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DATE  
LICENSE EXPIRES 9-30-2024

**SITE PLAN  
ELECTRICAL  
NEW WORK**

Project Number RRWRD 2023 (SDSE 19-006)  
Date 28 MAY 2019  
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**E104**

Scale 1" = 30'-0"



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ENGINEERING

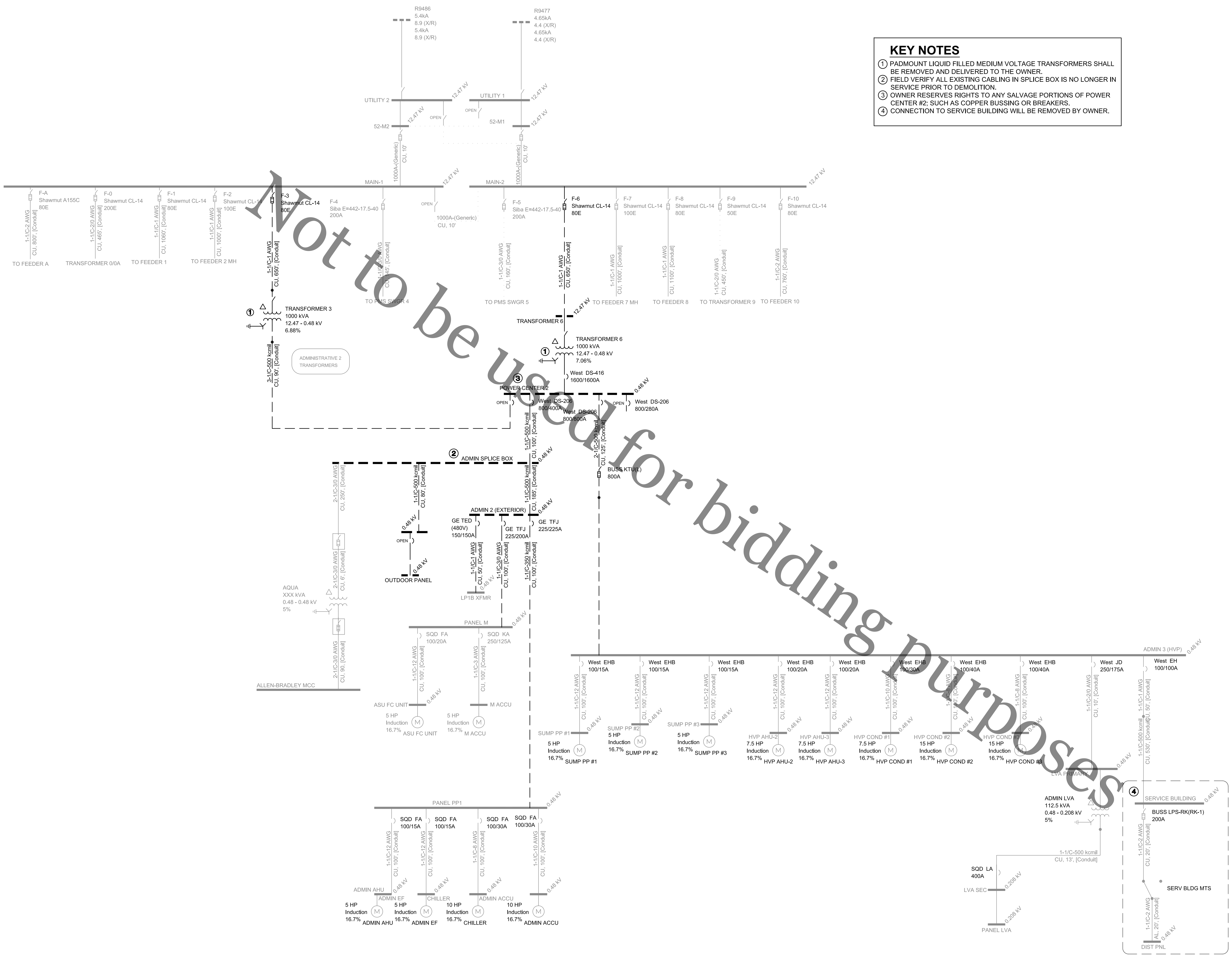
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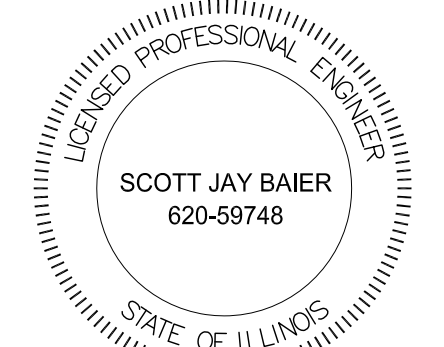
**SUBSTATION 3-6  
ELECTRICAL UPGRADES**  
Rock River Water Reclamation District  
3333 Kishwaukee St.  
Rockford, Illinois 61109

- KEY NOTES**
- 1 PADMOUNT LIQUID FILLED MEDIUM VOLTAGE TRANSFORMERS SHALL BE REMOVED AND DELIVERED TO THE OWNER.
  - 2 FIELD VERIFY ALL EXISTING CABLING IN SPICE BOX IS NO LONGER IN SERVICE PRIOR TO DEMOLITION.
  - 3 OWNER RESERVES RIGHTS TO ANY SALVAGE PORTIONS OF POWER CENTER #2; SUCH AS COPPER BUSSING OR BREAKERS.
  - 4 CONNECTION TO SERVICE BUILDING WILL BE REMOVED BY OWNER.



**EXISTING ONE-LINE DIAGRAM (DEMOLITION)**  
NO SCALE

No.	Description	Date
1	DRAFT	3/12/19
2	OWNER REVIEW	4/30/19
3	FINAL REVIEW	5/17/19
4		
5		
6		
7		



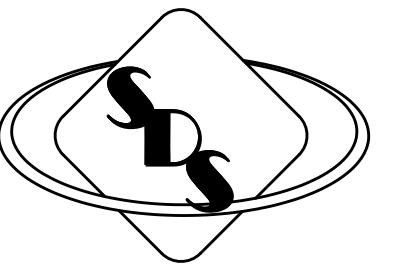
SIGNATURE  
DATE  
LICENSE EXPIRES 8-30-204

**EXISTING ONE-LINE DIAGRAM DEMOLITION**

Project Number RRWRD 1930 (SDSE 19-006)  
Date 24 MAY 2019  
Drawn By SDS  
Checked By SDSE

**E105**

Scale NO SCALE

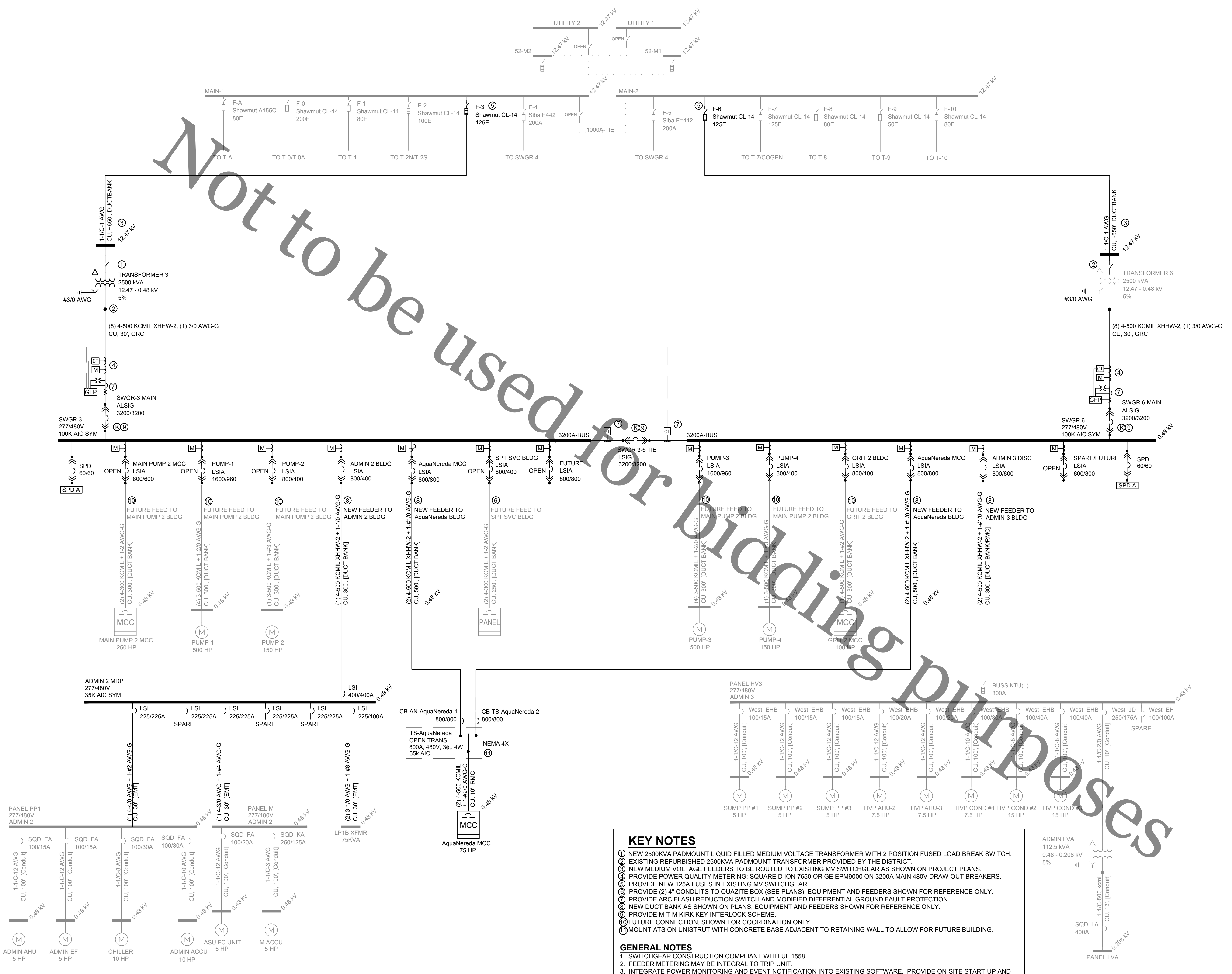


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**SUBSTATION 3-6  
ELECTRICAL UPGRADES  
CIP NO. 2023**  
Rock River Water Reclamation District  
3333 Kishwaukee St.  
Rockford, Illinois 61109



Not to be used for bidding purposes

- KEY NOTES**
1. NEW 2500KVA PADMOUNT LIQUID FILLED MEDIUM VOLTAGE TRANSFORMER WITH 2 POSITION FUSED LOAD BREAK SWITCH.
  2. EXISTING REFURBISHED 2500KVA PADMOUNT TRANSFORMER PROVIDED BY THE DISTRICT.
  3. NEW MEDIUM VOLTAGE FEEDERS TO BE ROUTED TO EXISTING MV SWITCHGEAR AS SHOWN ON PROJECT PLANS.
  4. PROVIDE POWER QUALITY METERING: SQUARE D ION 7650 OR GE EPMS9000 ON 3200A MAIN 480V DRAW-OUT BREAKERS.
  5. PROVIDE NEW 125A FUSES IN EXISTING MV SWITCHGEAR.
  6. PROVIDE (2) 4" CONDUITS TO QUAZITE BOX (SEE PLANS), EQUIPMENT AND FEEDERS SHOWN FOR REFERENCE ONLY.
  7. PROVIDE ARC FLASH REDUCTION SWITCH AND MODIFIED DIFFERENTIAL GROUND FAULT PROTECTION.
  8. NEW DUCT BANK AS SHOWN ON PLANS. EQUIPMENT AND FEEDERS SHOWN FOR REFERENCE ONLY.
  9. PROVIDE M-T-M KIRK KEY INTERLOCK SCHEME.
  10. FUTURE CONNECTION, SHOWN FOR COORDINATION ONLY.
  11. MOUNT ATS ON UNISTRUT WITH CONCRETE BASE ADJACENT TO RETAINING WALL TO ALLOW FOR FUTURE BUILDING.
- GENERAL NOTES**
1. SWITCHGEAR CONSTRUCTION COMPLIANT WITH UL 1558.
  2. FEEDER METERING MAY BE INTEGRAL TO TRIP UNIT.
  3. INTEGRATE POWER MONITORING AND EVENT NOTIFICATION INTO EXISTING SOFTWARE. PROVIDE ON-SITE START-UP AND PROGRAMMING.

**EXISTING ONE-LINE DIAGRAM (NEW WORK)**  
NO SCALE

No.	Description	Date
1	DRAFT	3/12/19
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3	FINAL REVIEW	5/17/19
4	ISSUED FOR CONST.	5/28/19



SIGNATURE  
DATE  
LICENSE EXPIRES 9-30-2024

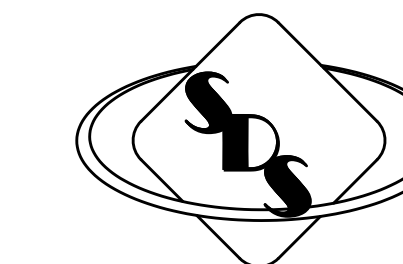
**EXISTING ONE-LINE DIAGRAM NEW WORK**

Project Number RRWRD 2023 (SDSE 19-006)  
Date 28 MAY 2019  
Drawn By SDS  
Checked By SDSE

**E106**

Scale NO SCALE



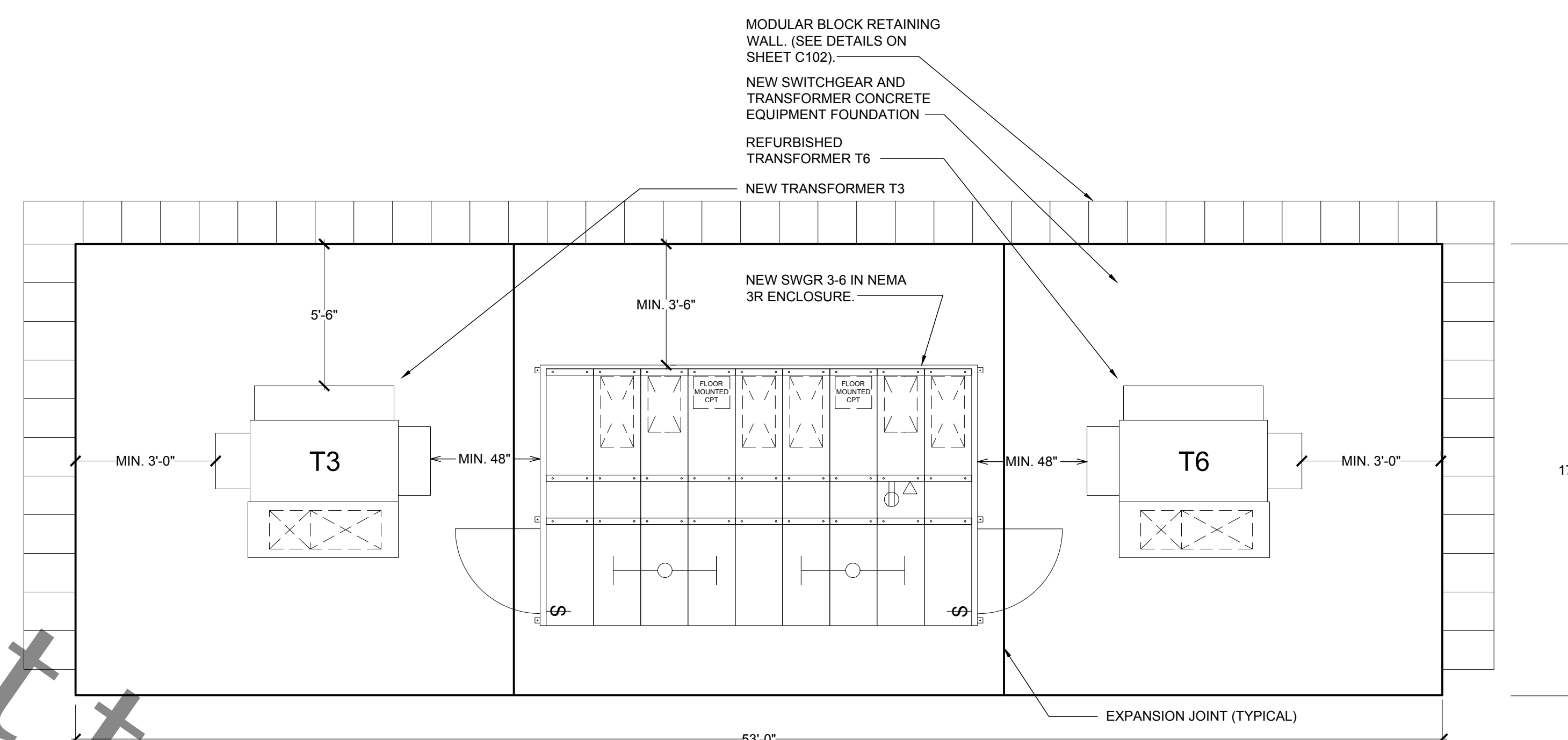


**SYSTEMS DESIGN SERVICE**  
engineering

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**SUBSTATION 3-6  
ELECTRICAL UPGRADES  
CIP NO. 2023**  
Rock River Water Reclamation District  
3333 Kishwaukee St.  
Rockford, Illinois 61109



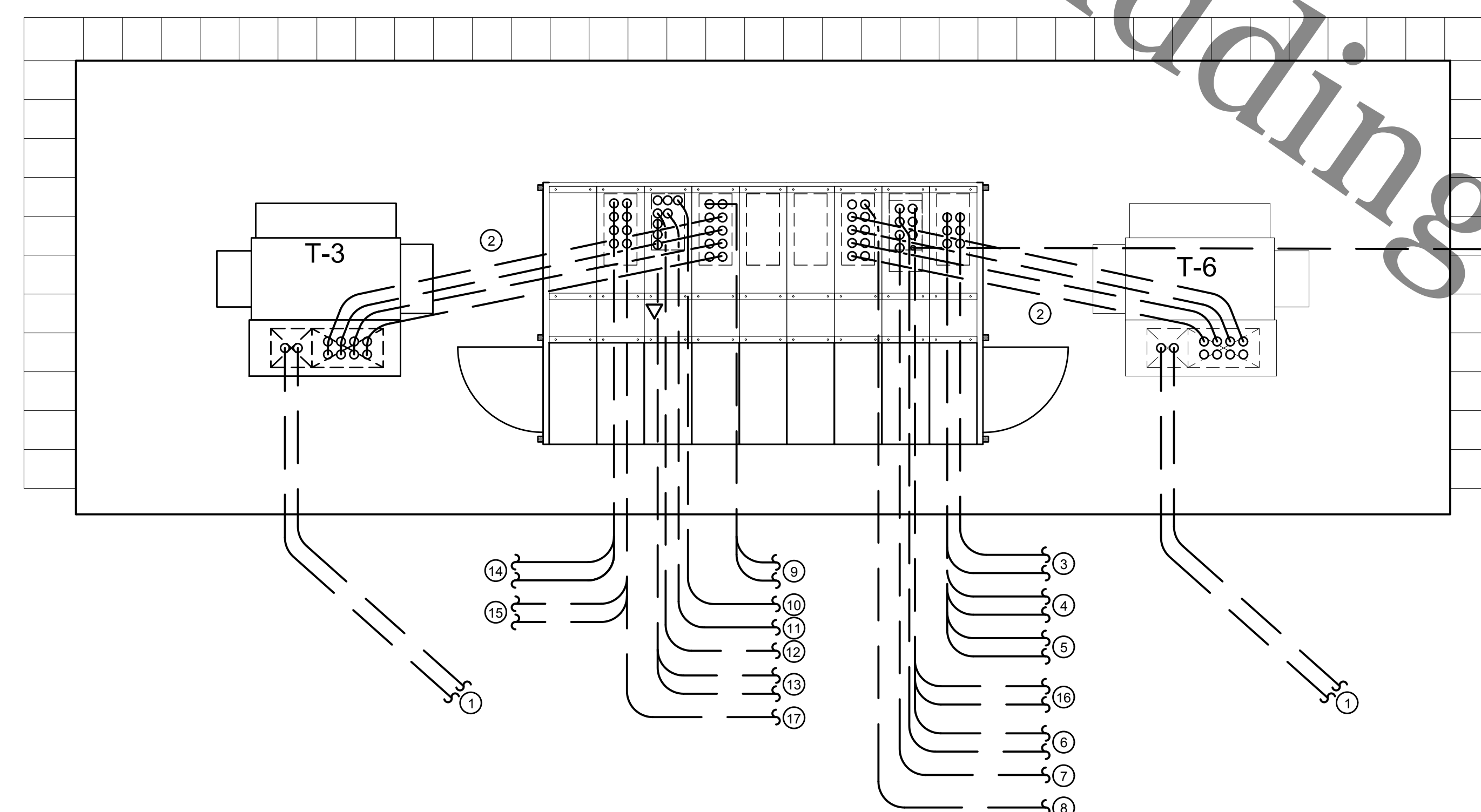
**NEW SWITCHGEAR FOUNDATION LAYOUT**

SCALE: 1/4" = 1'-0"

1

**CONCRETE EQUIPMENT FOUNDATION NOTES:**

- 1. REINFORCE THE FOUNDATION WITH NO. 6 RE-BARS ON 12IN (300MM) CENTERS HORIZONTALLY AND TRANSVERSE. MINIMUM COVER OVER THE BARS SHOULD BE 3IN.
- 2. SUBGRADE TO BE COMPACTED THEN COVERED WITH 10" CA-6 OR EQUIVALENT COMPACTED STONE AND 10" SELECT TRENCH BACKFILL.
- 3. CONCRETE MIXTURE (AIR ENTRAINED) DOT CLASS S1 OR APPROVED EQUIVALENT. MAXIMUM SLUMP OF 4IN (100MM) AND A 28-DAY COMPRESSIVE STRENGTH OF 4500 PSI WITH BROOMED FINISH. SEE SWITCHGEAR ELEVATION ON SHEET E110 FOR ADDITIONAL DETAIL.
- 4. THE ANCHOR BOLTS HOLDING THE SUB-BASE TO THE FOUNDATION SHOULD BE SIZED TO MATCH THE MOUNTING HOLES SHOWN ON THE MANUFACTURER'S INSTALLATION DIAGRAM. ALL MOUNTING HARDWARE SHALL BE STAINLESS STEEL.
- 5. USE "J" OR "L" TYPE BOLTS FOR THE FOUNDATION BOLTS. ALL MOUNTING HARDWARE SHALL BE STAINLESS STEEL. SEE SPECIFICATION SECTION 26 05 29.
- 6. COORDINATE EXACT SIZE OF TRANSFORMER TO WITH THE DISTRICT PRIOR TO ROUGH-IN.



**NEW SWITCHGEAR LAYOUT**

SCALE: 1/4" = 1'-0" (DIAGRAMATIC)

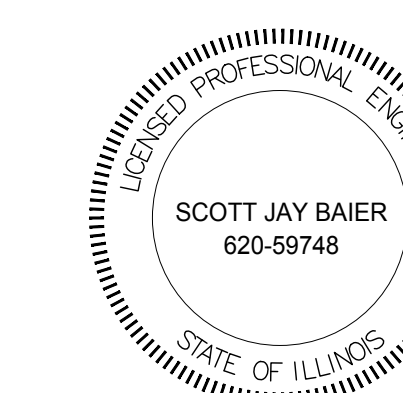
2

**SWITCHGEAR CONDUIT NOTES:**

- 1. (2) 4" CONDUITS WITH MV FEEDERS FROM TX PRIMARY TO MV SWITCHGEAR VIA EMH-17.
- 2. (8) 4" CONDUITS WITH 3200A FEEDERS FROM TX SECONDARY TO SWITCHGEAR MAIN BREAKER.
- 3. (2) 4" CONDUITS WITH 800A FEEDERS TO AquaNerada ATS VIA EMH-19.
- 4. (2) 4" CONDUITS WITH 800A FEEDERS TO EXISTING ADMIN 3 DISCONNECT.
- 5. (2) 4" CONDUITS (SPARE) TO EMH-19.
- 6. (4) 4" CONDUITS FOR 1200A FUTURE FEEDERS TO PUMP-3.
- 7. (2) 4" CONDUIT FOR 400A FUTURE FEEDER TO GRIT-2.
- 8. (1) 4" CONDUIT FOR 400A FUTURE FEEDER TO PUMP-4.
- 9. (2) 4" CONDUITS WITH 800A FEEDERS TO AquaNerada ATS VIA EMH-19.
- 10. (2) 4" CONDUITS WITH ONE 400A FEEDER TO ADMIN-2 MDP.
- 11. (4) 4" CONDUITS FOR 1200A FUTURE FEEDERS TO PUMP-1.
- 12. (1) 4" CONDUIT FOR 400A FUTURE FEEDER TO PUMP-2.
- 13. (2) 4" CONDUITS FOR 800A FUTURE FEEDERS TO MAIN PUMP-2 MCC.
- 14. (4) 4" CONDUITS FOR 800A FUTURE FEEDERS TO SUPPORT SERVICES BUILDING TO PULLBOX.
- 15. (2) 4" CONDUITS FOR 800A FUTURE FEEDERS FOR SPARE TO PULLBOX.
- 16. (1) 4" CONDUITS (SPARE) TO EMH-18.
- 17. (4) 4" CONDUIT (SPARE) TO EMH-19.
- 18. (1) 4" CONDUIT FOR OWNER PROVIDED COMMUNICATIONS CABLE TO NEW COMMUNICATIONS HANDHOLE.

Not to be used for bidding purposes

No.	Description	Date
1	DRAFT	3/12/19
2	OWNER REVIEW	4/30/19
3	FINAL REVIEW	5/17/19
4	ISSUED FOR CONST.	5/28/19



SIGNATURE  
DATE  
LICENSE EXPIRES 9-30-20H

**SUBSTATION 3-6  
SWITCHGEAR  
DETAIL**

Project Number RRWRD 2023 (SDSE 19-006)

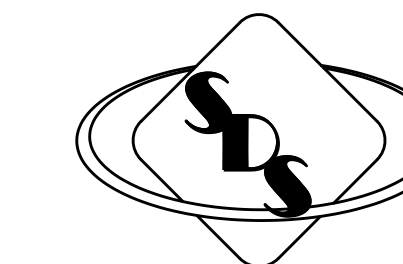
Date 28 MAY 2019

Drawn By SDS

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**E107**

Scale 1/4" = 1'-0"



**SYSTEMS DESIGN SERVICE**  
engineering

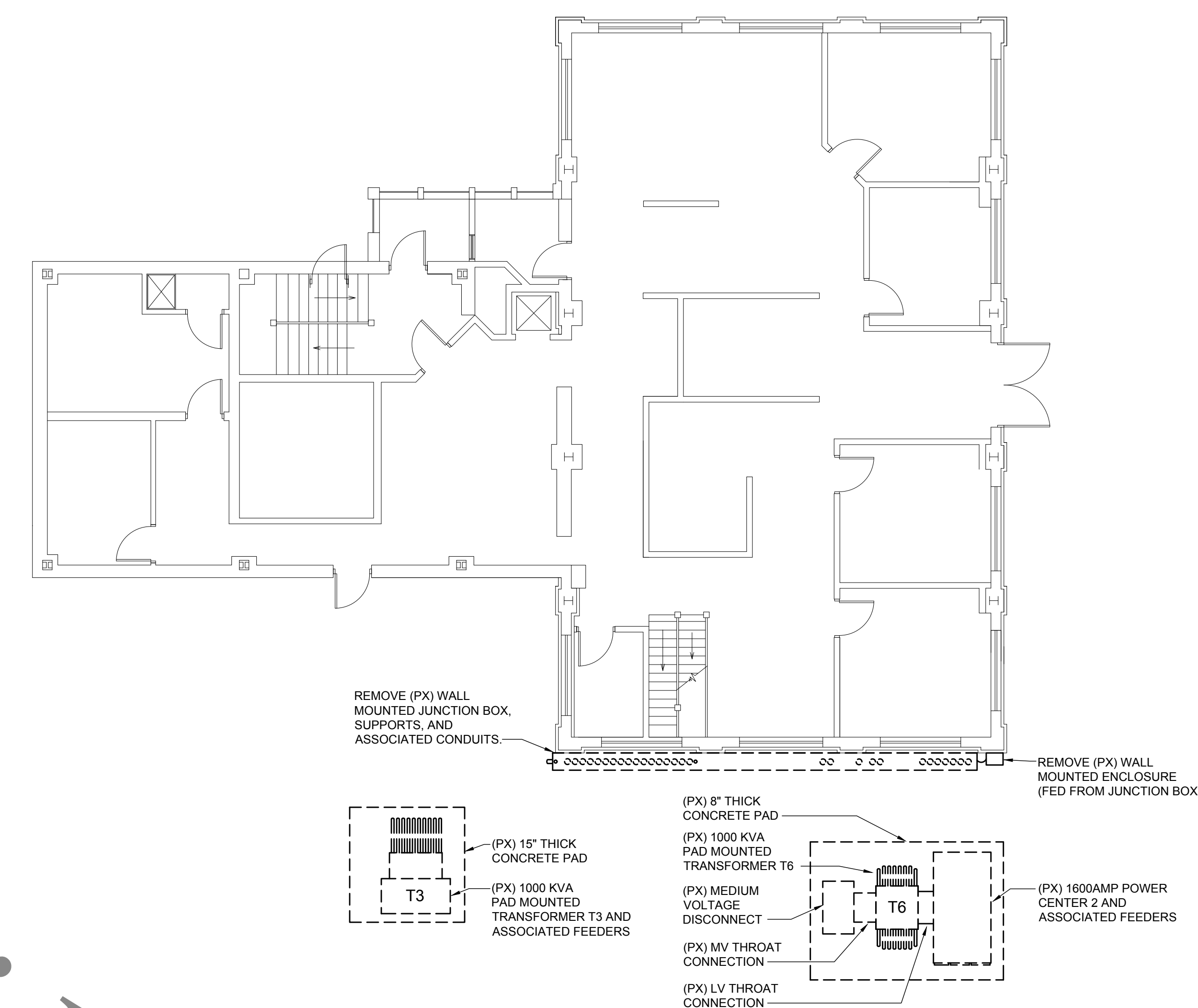
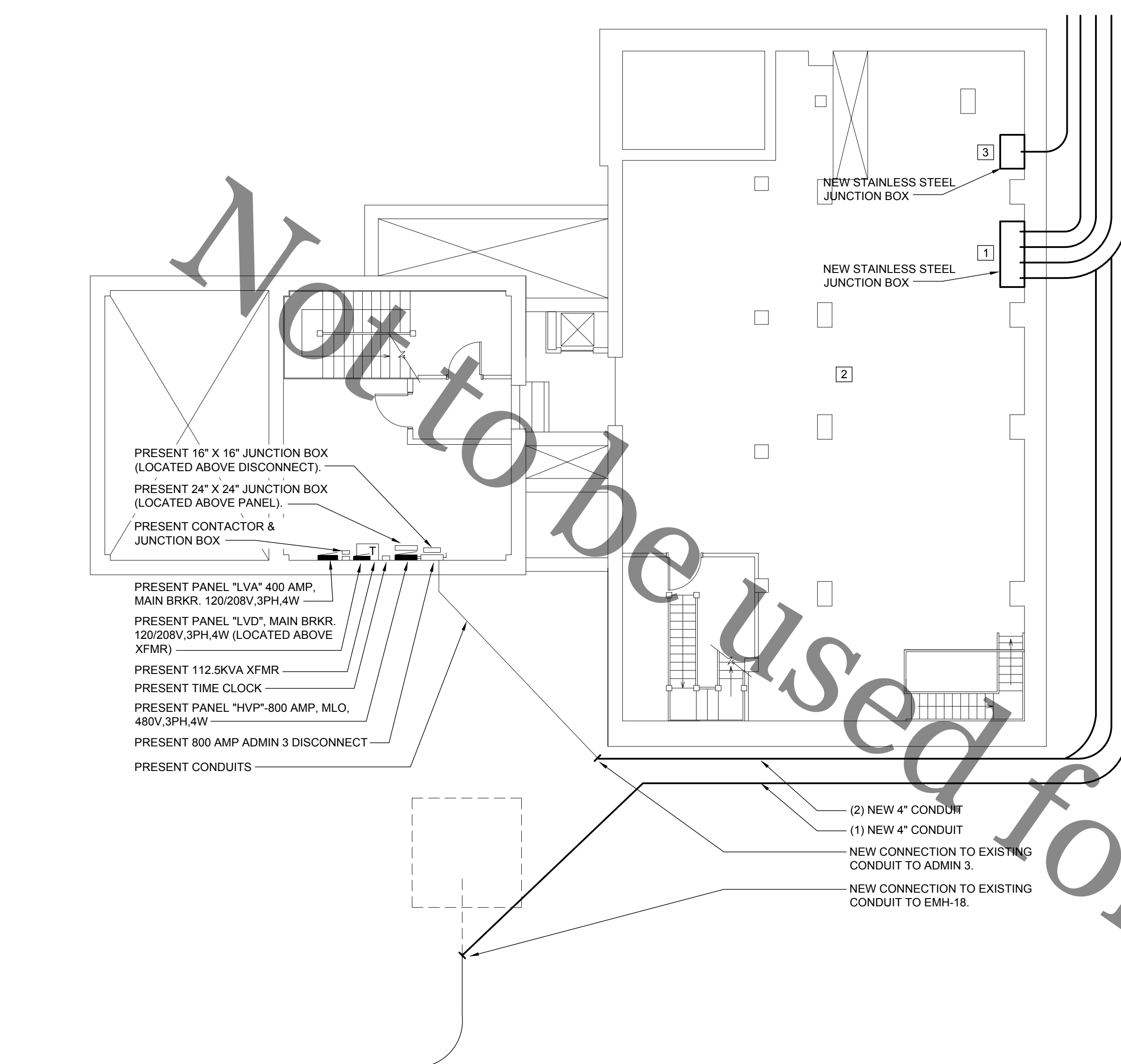
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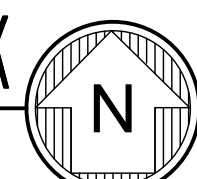
IL PROF DESIGN FIRM #184.004999

**SUBSTATION 3-6  
ELECTRICAL UPGRADES  
CIP NO. 2023**  
Rock River Water Reclamation District  
3333 Kishwaukee St.  
Rockford, Illinois 61109



**ADMINISTRATION BUILDING 3 BASEMENT PLAN - ELECTRICAL NEW WORK**

SCALE: 1/8" = 1'-0"

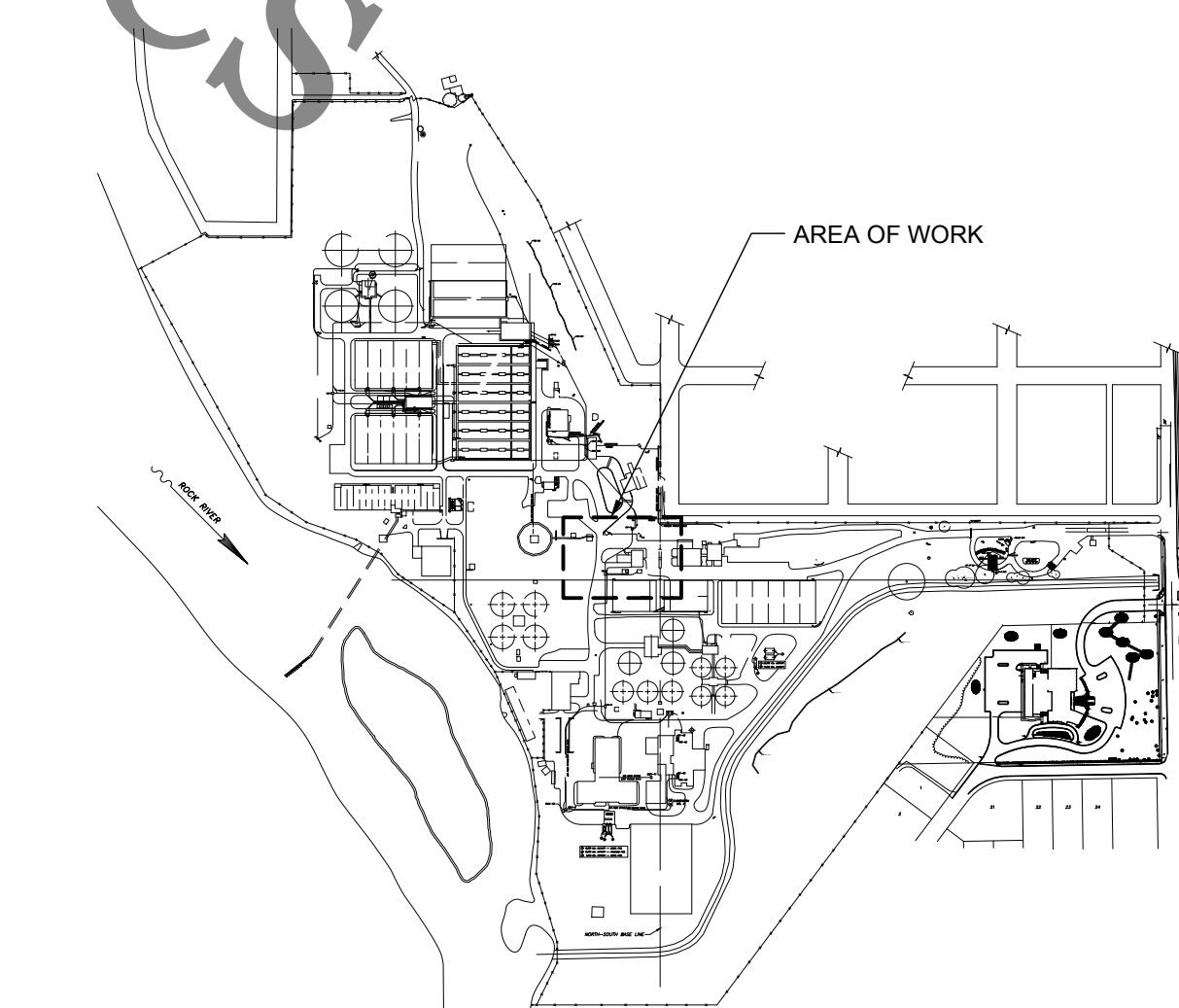
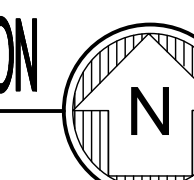


**KEY NOTES FOR THIS SHEET**

- 1. CONDUIT TO ENTER BUILDING APPROX. 10'-0" BELOW GRADE. COMPLETELY REMOVE EXISTING WOODEN STORAGE STRUCTURE TO ALLOW FOR NEW CONSTRUCTION.
- 2. PROVIDE TEMPORARY LIGHTING AS NEEDED FOR WORK. EXISTING BUILDING POWER CAN BE UTILIZED AS NEEDED FOR TEMPORARY LIGHTING.
- 3. NEW 12" X 12" STAINLESS STEEL JUNCTION BOX FOR COMMUNICATIONS CONDUIT.

**ADMINISTRATION BUILDING 3 FIRST FLOOR PLAN - ELECTRICAL DEMOLITION**

SCALE: 1/8" = 1'-0"

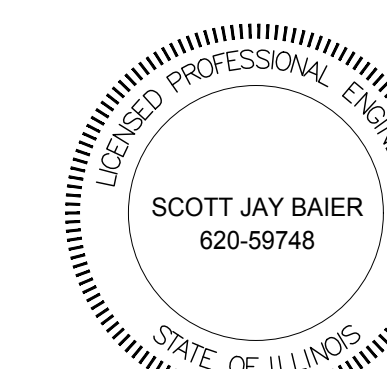


**KEY PLAN**

NO SCALE



No.	Description	Date
1	DRAFT	3/12/19
2	OWNER REVIEW	4/30/19
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4	ISSUED FOR CONST.	5/28/19

SIGNATURE  
DATE  
LICENSE EXPIRES 9-30-2024

**ADMIN BLDG 3  
ELECTRICAL DEMO  
& NEW WORK**

Project Number RRWRD 2023 (SDSE 19-006)

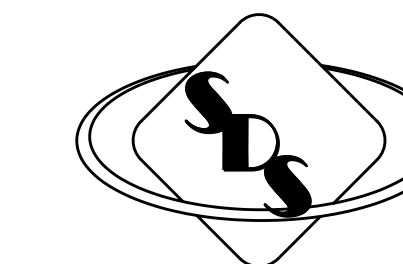
Date 28 MAY 2019

Drawn By SDS

Checked By SDSE

**E108**

Scale 1/8" = 1'-0"

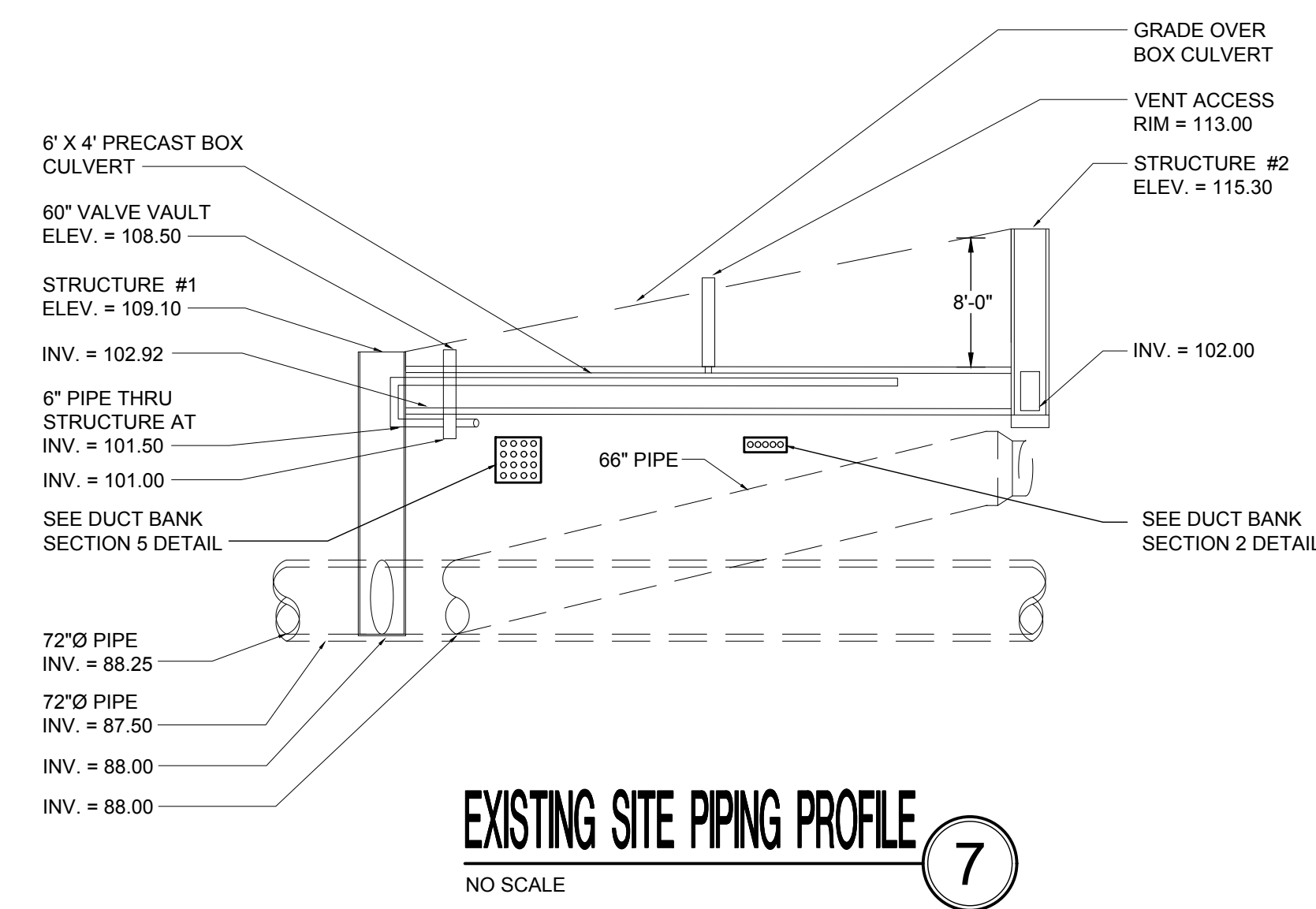
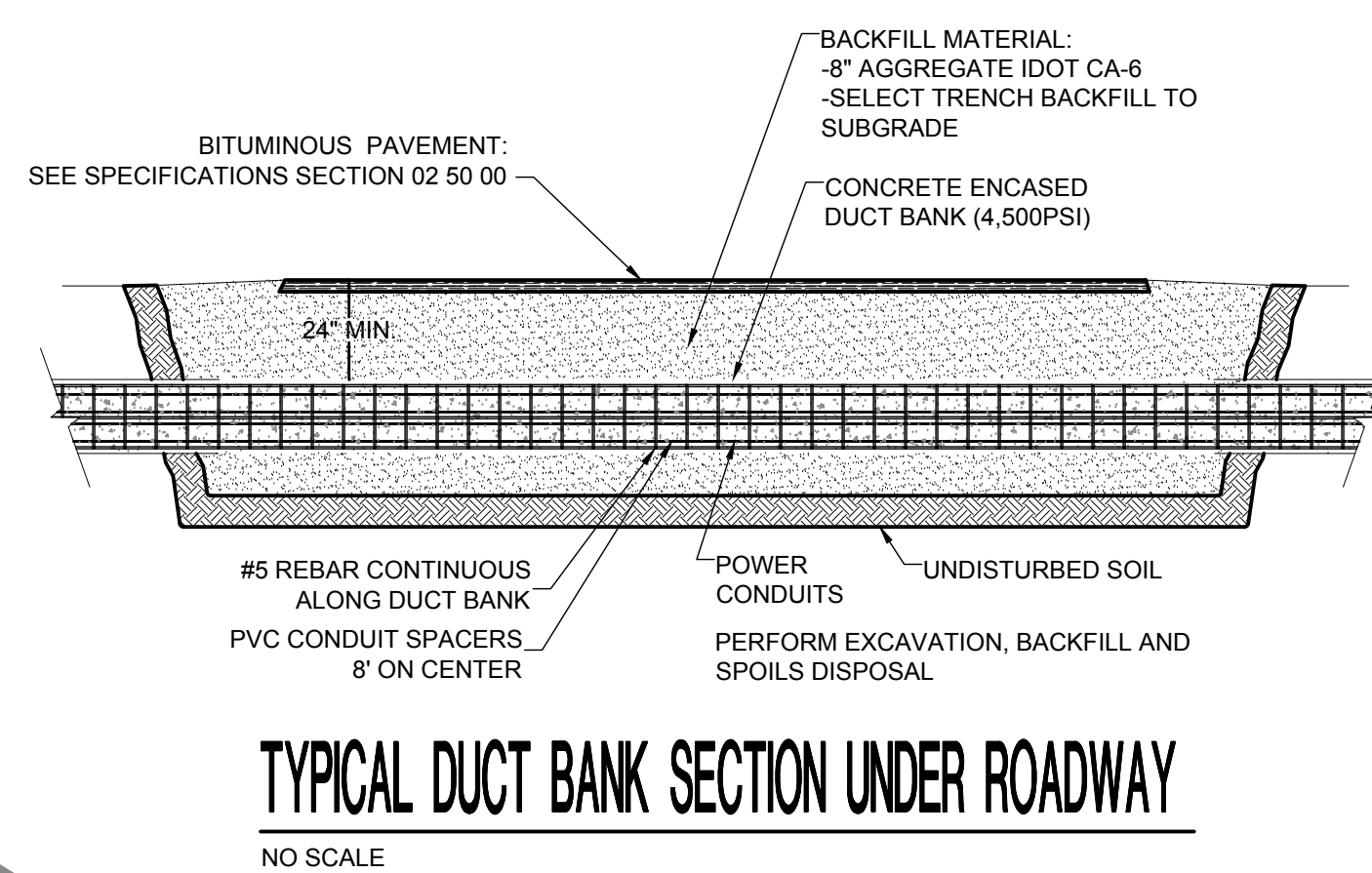
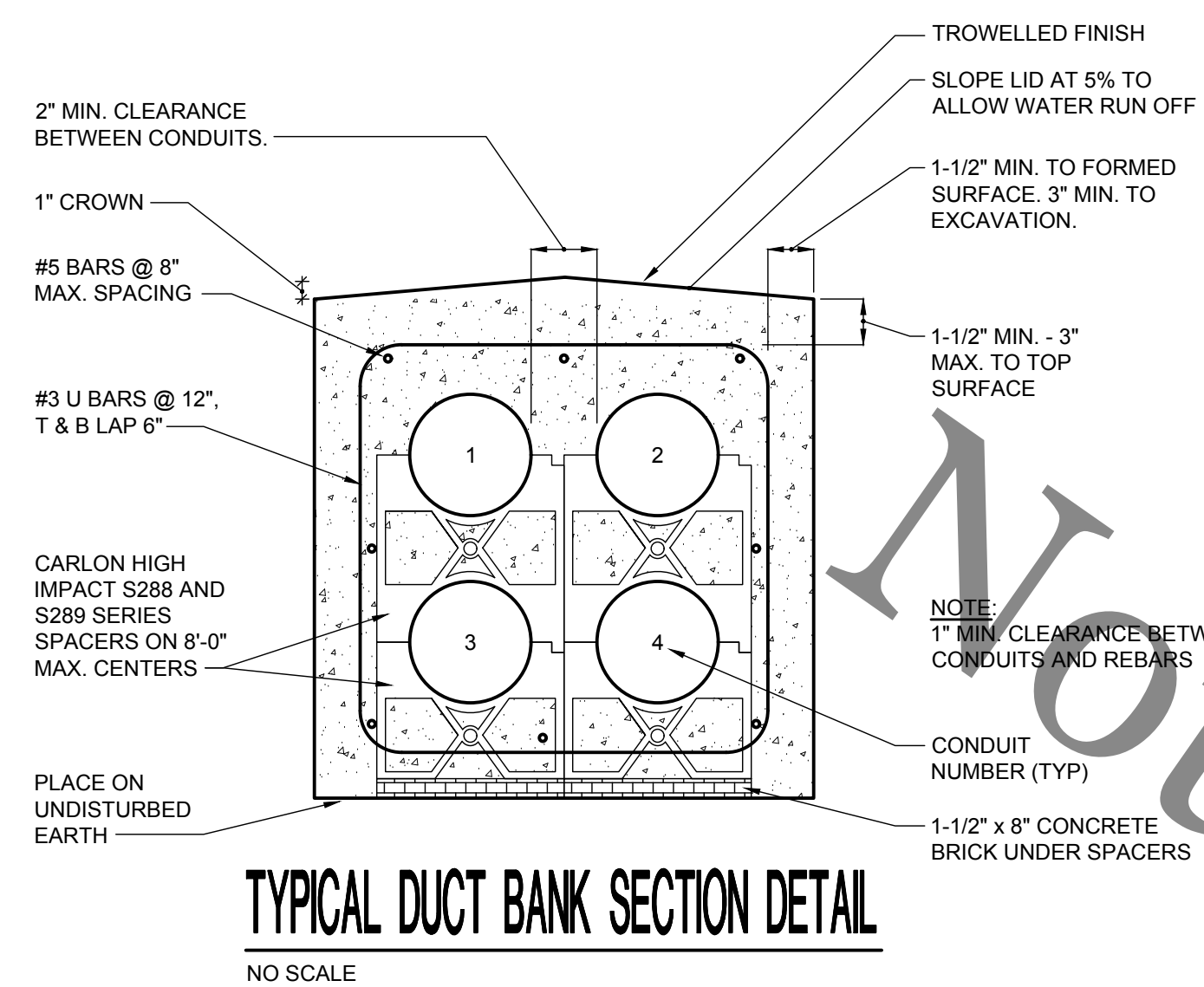


**SYSTEMS DESIGN SERVICE**  
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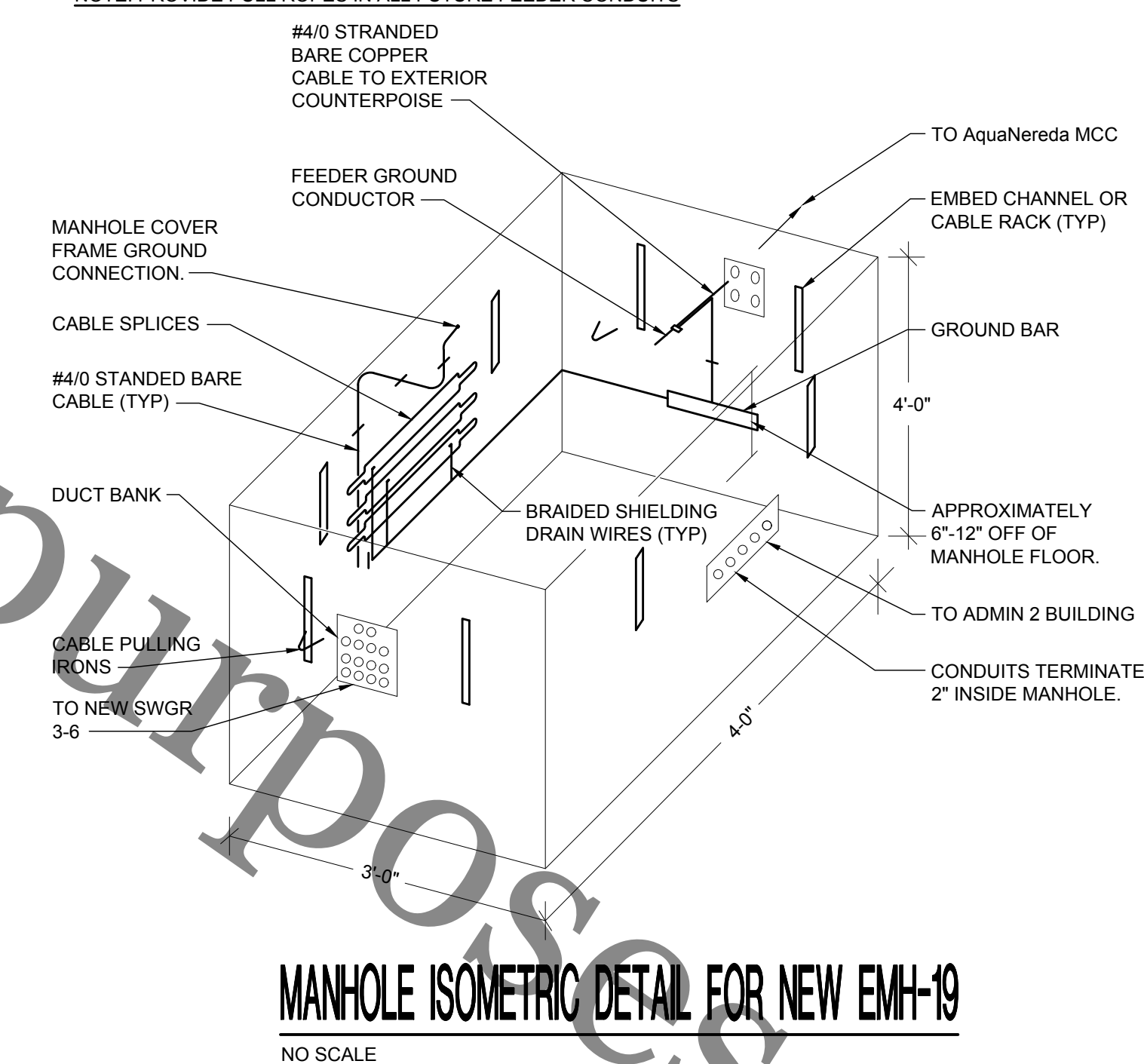
**SUBSTATION 3-6  
ELECTRICAL UPGRADES  
CIP NO. 2023**  
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Rockford, Illinois 61109



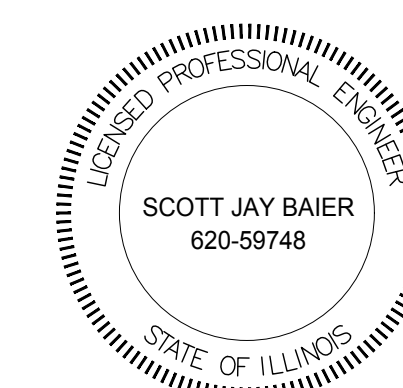
**DUCT BANK SCHEDULE:**

COND. NO.	SIZE	EQUIPMENT	REMARKS
1	4"	ADMIN 2 MDP	ADMIN 2 NEW FEEDER
2	4"	AquaNereda	AquaNereda ATS NEW FEEDER
3	4"	GRIT BUILDING 2 MCC	FUTURE FEEDER
4	4"	ADMIN 3 DISC	REFEED TO ADMIN 3 BUILDING
5	4"	SUPPORT SERVICES MDP	FUTURE FEEDER TO SUPPORT SERVICES BUILDING
6	4"	PUMP 2 MCC	FUTURE FEEDER TO PUMP 2 MCC
7	4"	PUMP 1	FUTURE FEEDER TO PUMP 1
8	4"	PUMP 3	FUTURE FEEDER TO PUMP 3
9	4"	PUMP 2	FUTURE FEEDER TO PUMP 2
10	4"	PUMP 4	FUTURE FEEDER TO PUMP 4
11	4"	FIBER	COMMUNICATIONS CONDUIT TO ADMIN 2 BUILDING
12	4"	FIBER	COMMUNICATIONS CONDUIT TO ADMIN 3 BUILDING
13	4"	FIBER	COMMUNICATIONS CONDUIT TO AquaNereda PB

NOTE: PROVIDE PULL ROPES IN ALL FUTURE FEEDER CONDUITS



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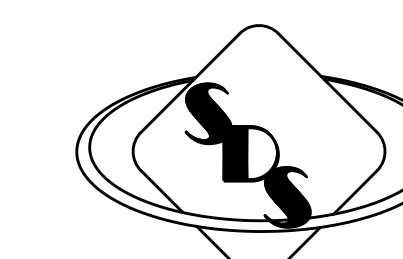
SIGNATURE  
DATE  
LICENSE EXPIRES 9-30-2024

**DUCT BANK AND  
MANHOLE DETAILS**

Project Number RRWRD 2023 (SDSE 19-006)  
Date 28 MAY 2019  
Drawn By SDS  
Checked By SDSE

**E109**

Scale SEE PLAN

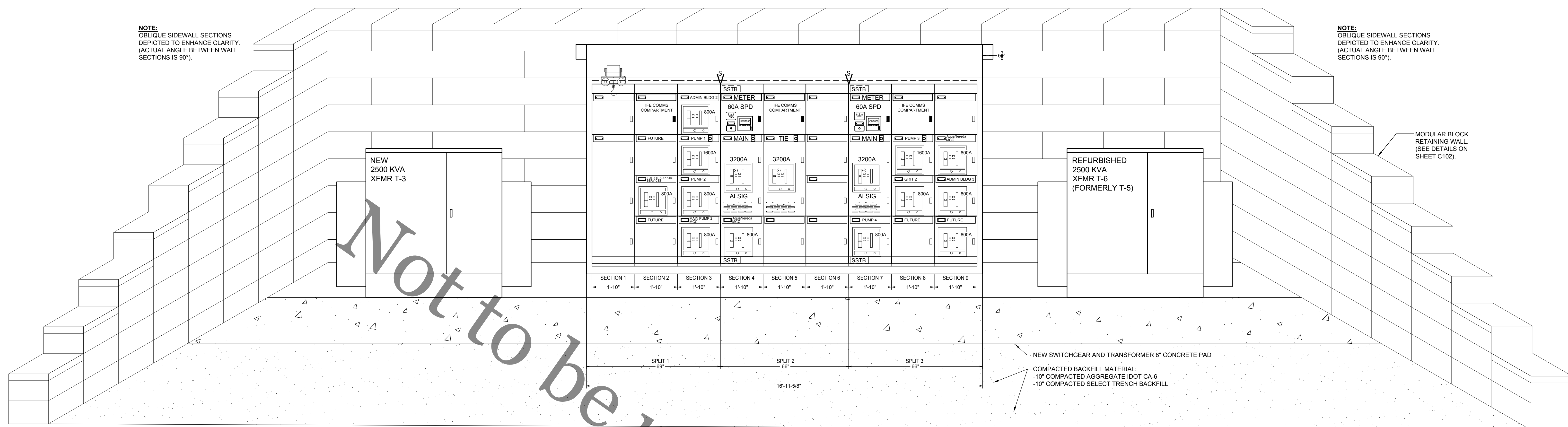


**SYSTEMS DESIGN SERVICE**  
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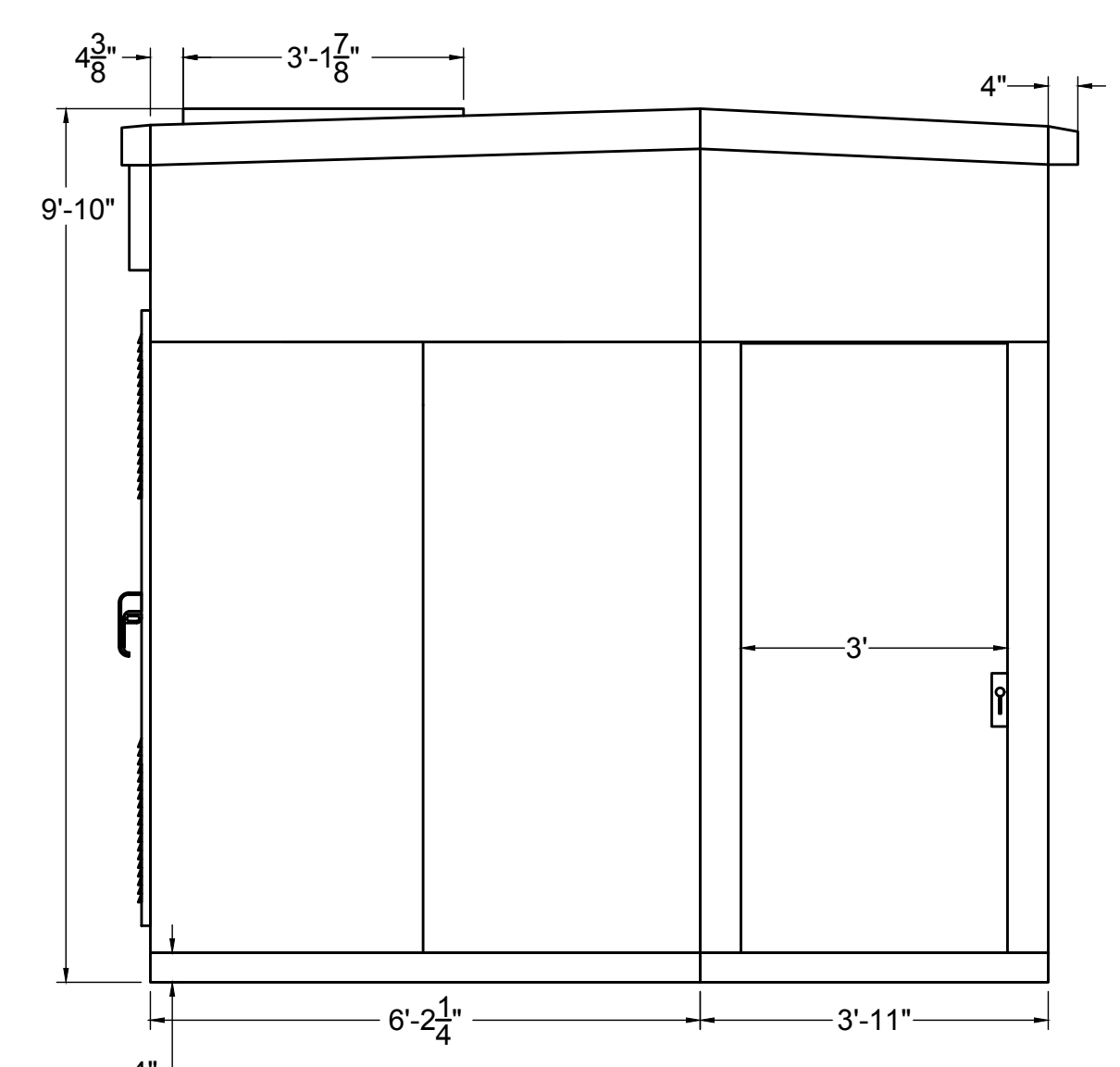
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**SUBSTATION 3-6  
ELECTRICAL UPGRADES  
CIP NO. 2023**  
Rock River Water Reclamation District  
3333 Kishwaukee St.  
Rockford, Illinois 61109



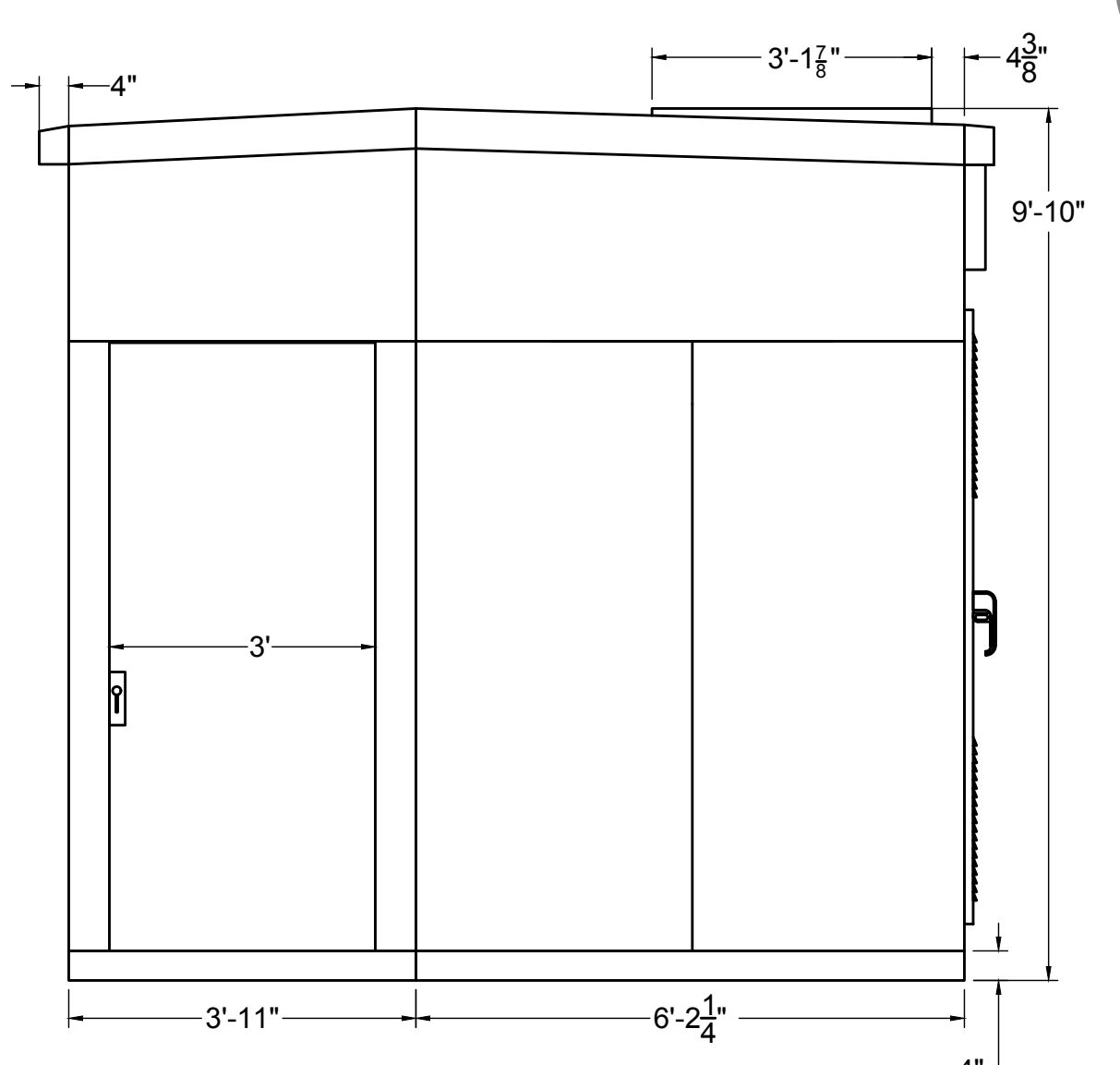
**NEW SWITCHGEAR - FRONT ELEVATION**

NO SCALE (SEE DIMENSIONS)  
ELECTRICAL CONTRACTOR SHALL PROVIDE KEYPAD LOCKS FOR EACH DOOR OF SWITCHGEAR. M. SPINELLO & SON MUST PERFORM THE NECESSARY WORK TO KEY THE LOCKS. THE CONTRACTOR IS NOT REQUIRED TO PURCHASE HARDWARE FROM M. SPINELLO & SON, BUT MUST CONSULT WITH M. SPINELLO & SON TO ENSURE THE PROPER STYLE IS PURCHASED. THE ELECTRICAL CONTRACTOR SHALL MEET WITH THE DISTRICT OPERATIONS PRIOR TO HAVING ANY WORK PERFORMED BY M. SPINELLO & SON TO RECEIVE FINAL KEYING INSTRUCTIONS.



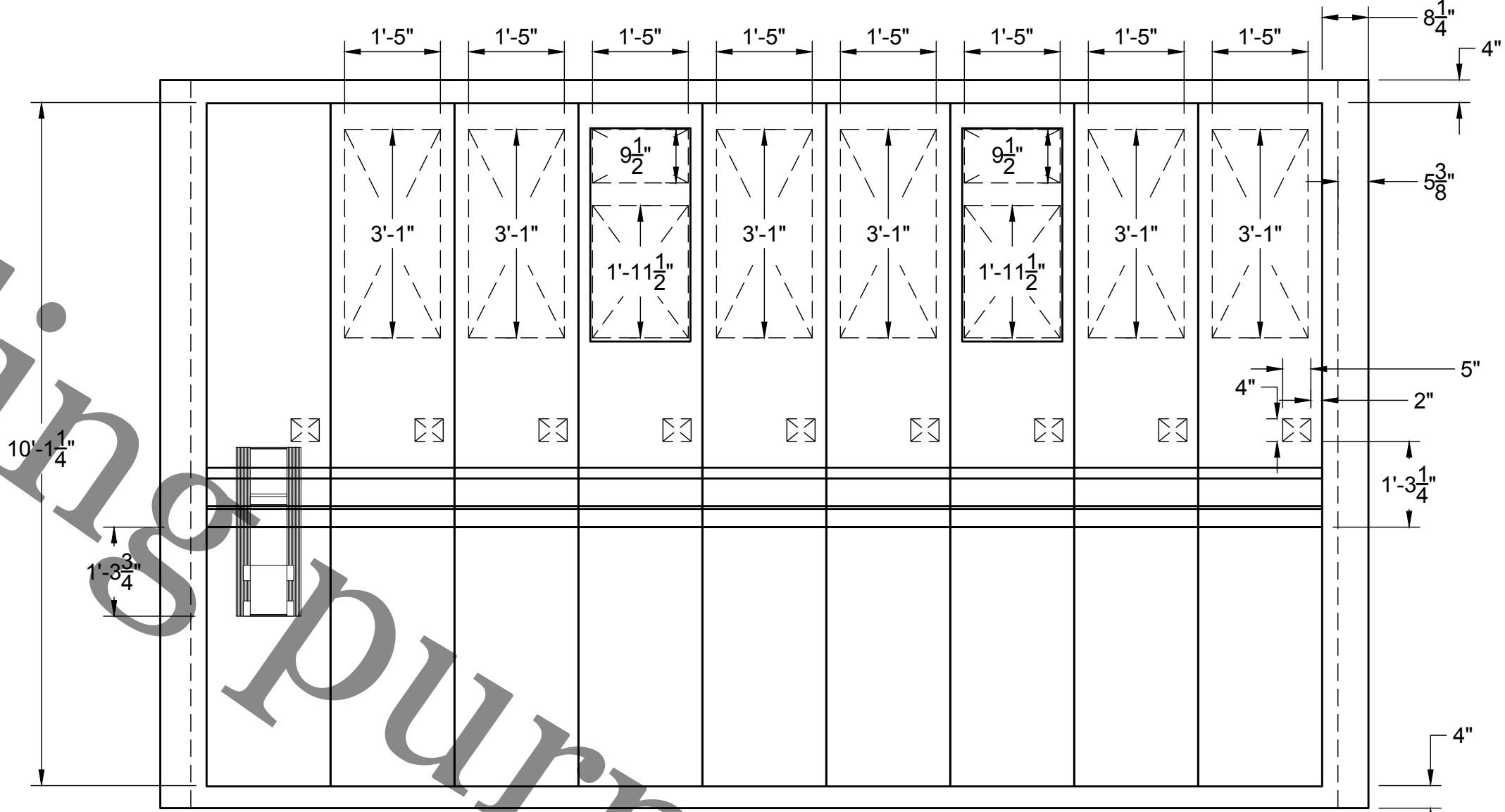
**NEW SWITCHGEAR - LEFT SIDE VIEW**

NO SCALE (SEE DIMENSIONS)



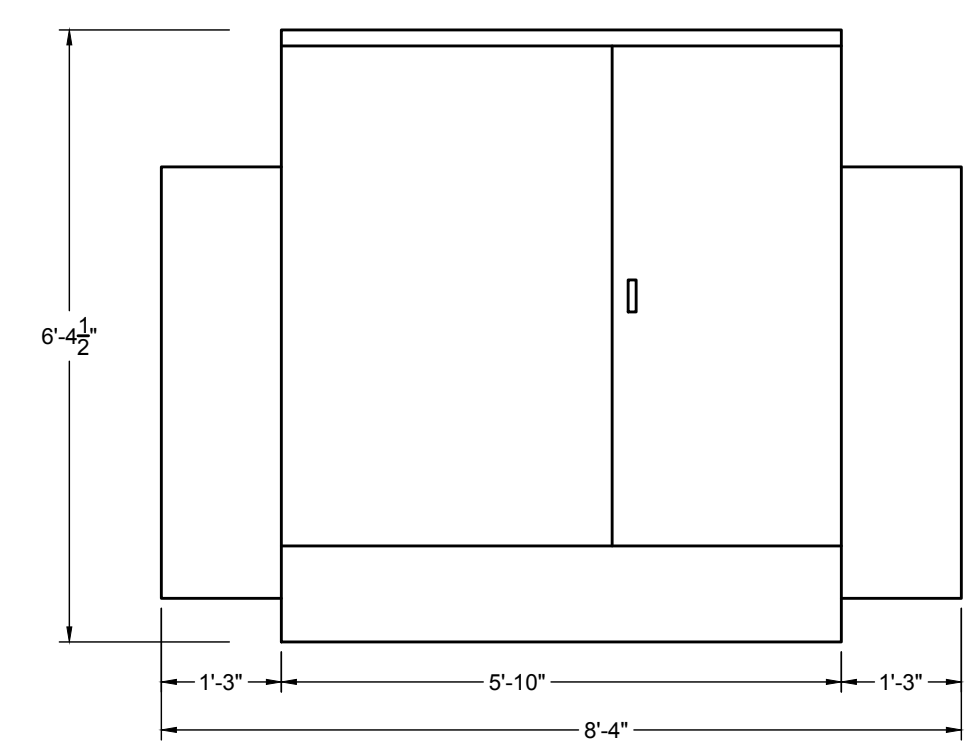
**NEW SWITCHGEAR - RIGHT SIDE VIEW**

NO SCALE (SEE DIMENSIONS)



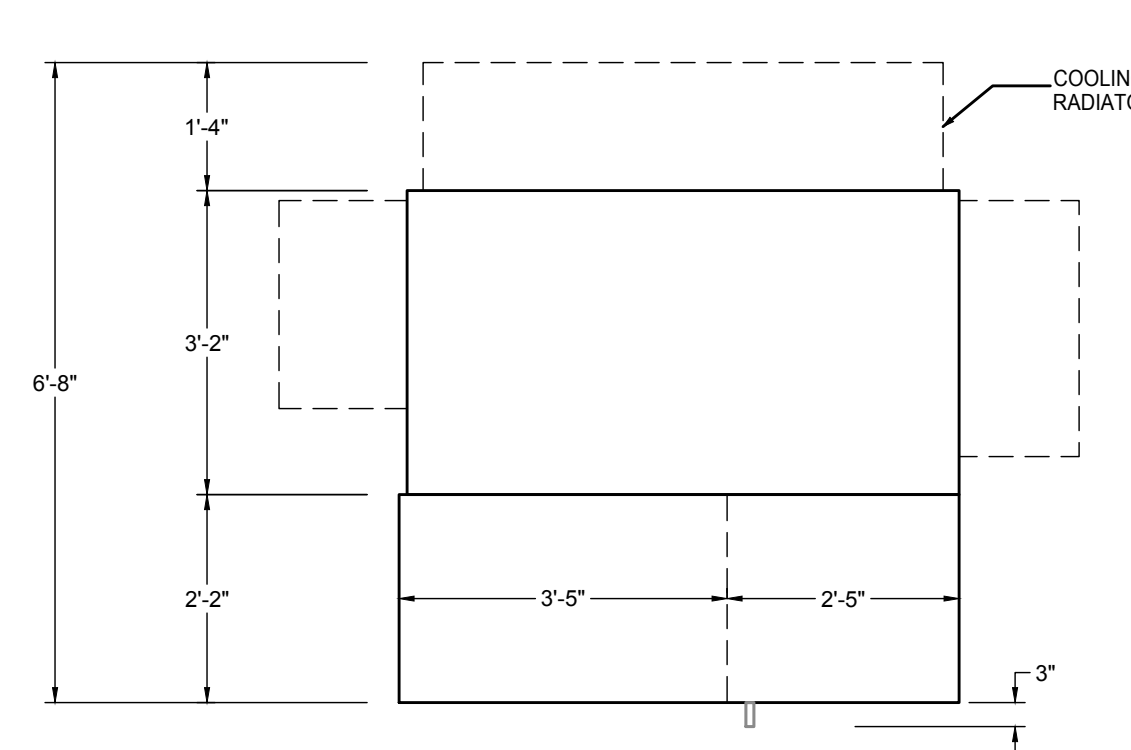
**NEW SWITCHGEAR - TOP CONDUIT ENTRY**

NO SCALE (SEE DIMENSIONS)



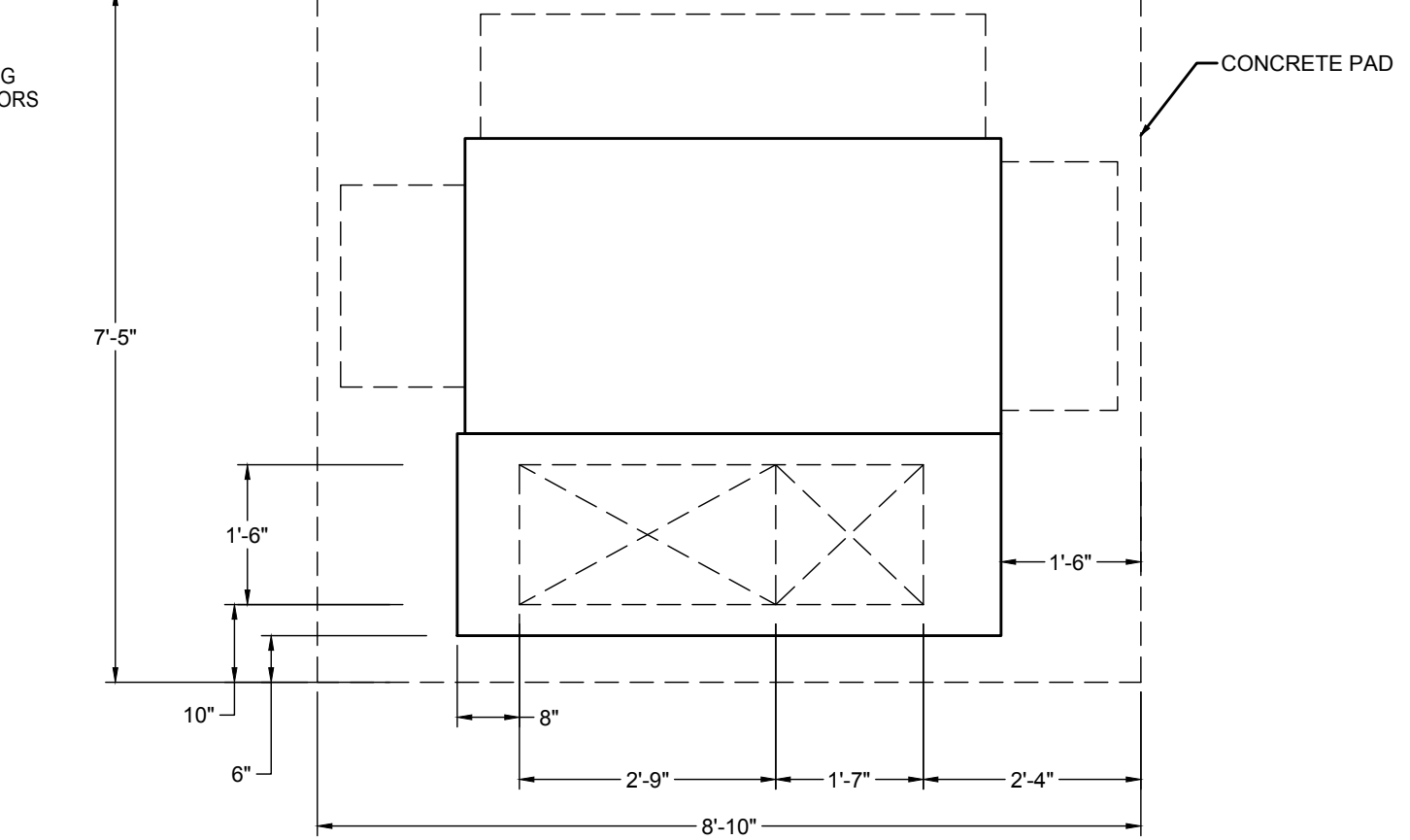
**NEW PAD MOUNTED TRANSFORMER - FRONT ELEVATION**

NO SCALE (SEE DIMENSIONS)



**NEW PAD MOUNTED TRANSFORMER - TOP VIEW**

NO SCALE (SEE DIMENSIONS)



**NEW PAD MOUNTED TRANSFORMER - PLAN VIEW**

NO SCALE (SEE DIMENSIONS)

No.	Description	Date
1	DRAFT	3/12/19
2	OWNER REVIEW	4/30/19
3	FINAL REVIEW	5/17/19
4	ISSUED FOR CONST.	5/28/19



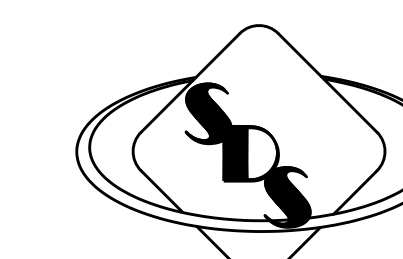
SIGNATURE  
DATE  
LICENSE EXPIRES 3-30-2024

**SWITCHGEAR 3-6 & TRANSFORMER DETAILS**

Project Number RRWRD 2023 (SDSE 19-006)  
Date 28 MAY 2019  
Drawn By SDS  
Checked By SDSE

**E110**

Scale NO SCALE

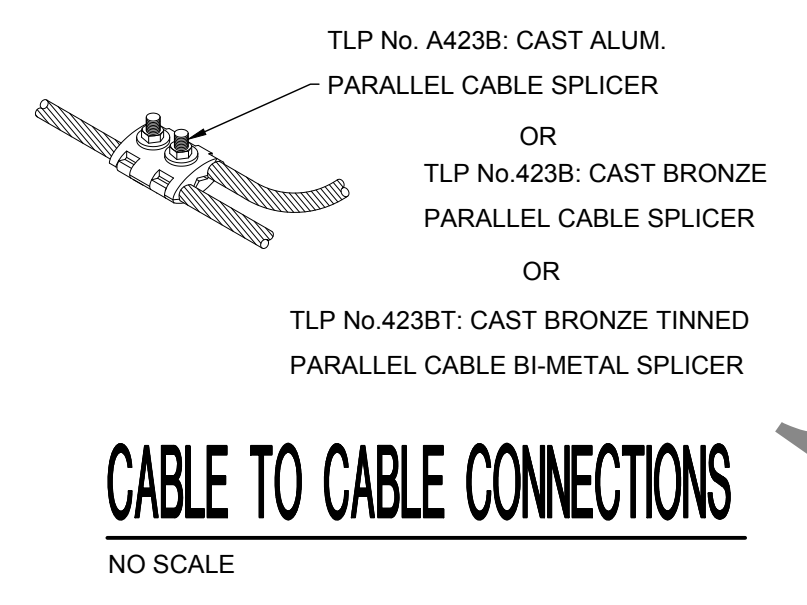


**SYSTEMS DESIGN SERVICE**  
engineering

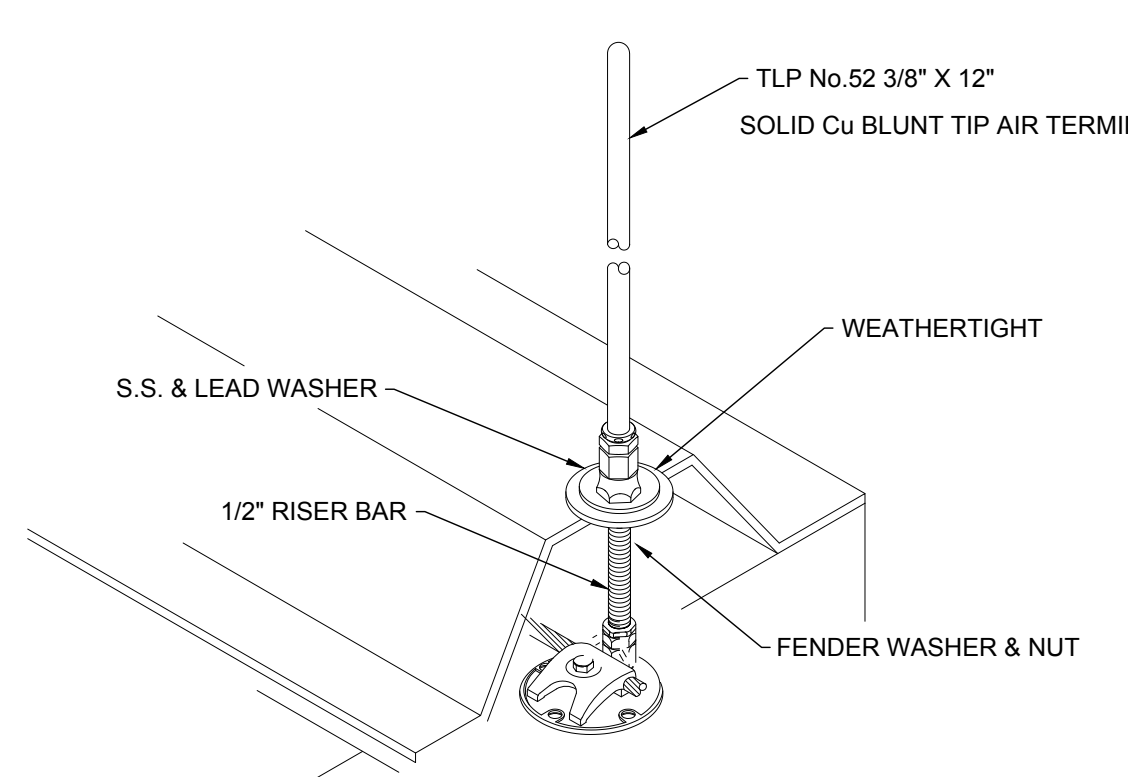
3600 EAST STATE STREET SUITE 215  
ROCKFORD, ILLINOIS 61108

PHONE (815) 399-3381 FAX (815) 399-3383  
WWW.SDSEGROUP.COM  
IL PROF DESIGN FIRM #184.004999

**SUBSTATION 3-6  
ELECTRICAL UPGRADES  
CIP NO. 2023**  
Rock River Water Reclamation District  
3333 Kishwaukee St.  
Rockford, Illinois 61109

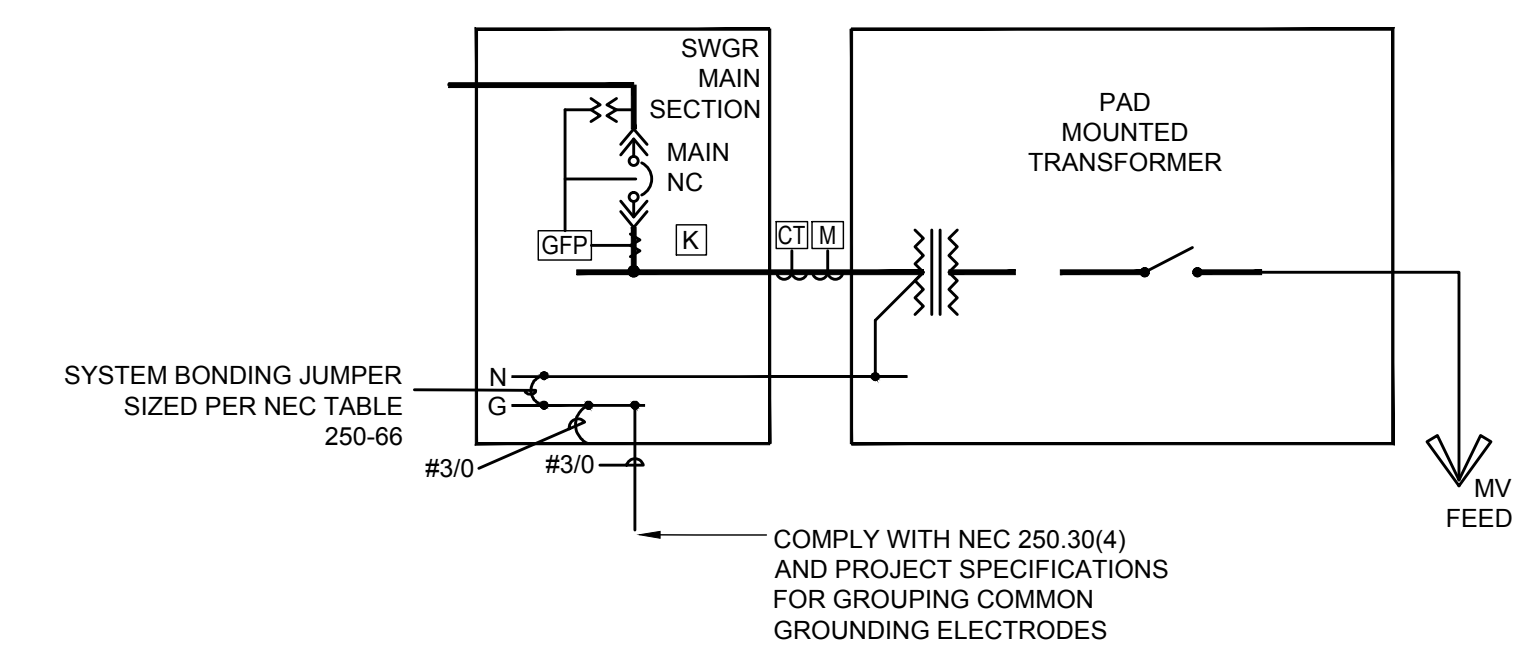


**CABLE TO CABLE CONNECTIONS**  
NO SCALE



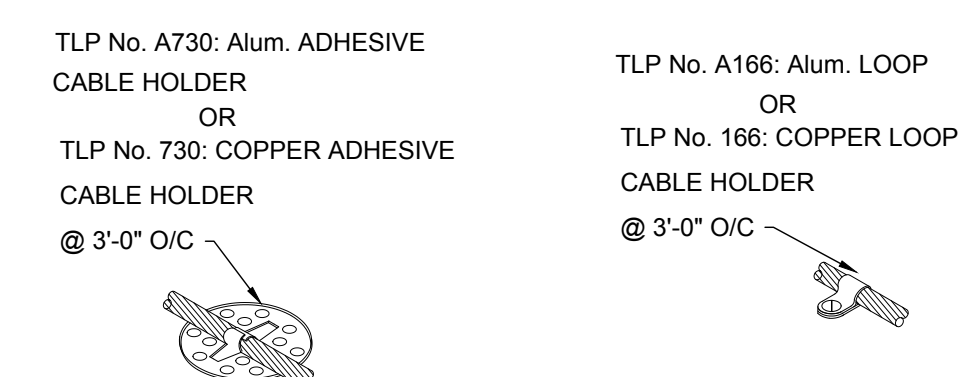
**DETAIL "A"**  
NO SCALE

NOTE: INSTALLATION IS BASED ON ALL ENCLOSURE MOUNTED LIGHTNING PROTECTION EQUIPMENT BEING FASTENED DIRECTLY TO METAL SURFACE.  
  
NOTE: THE FOLLOWING DETAILS ARE INTENDED FOR GENERAL GUIDANCE AND INSTALLATION METHODS ONLY. INSTALLER TO CO-ORDINATE IN FIELD AS REQUIRED TO MATCH CONSTRUCTION MATERIALS AND METHODS IN USE ON THIS PROJECT.

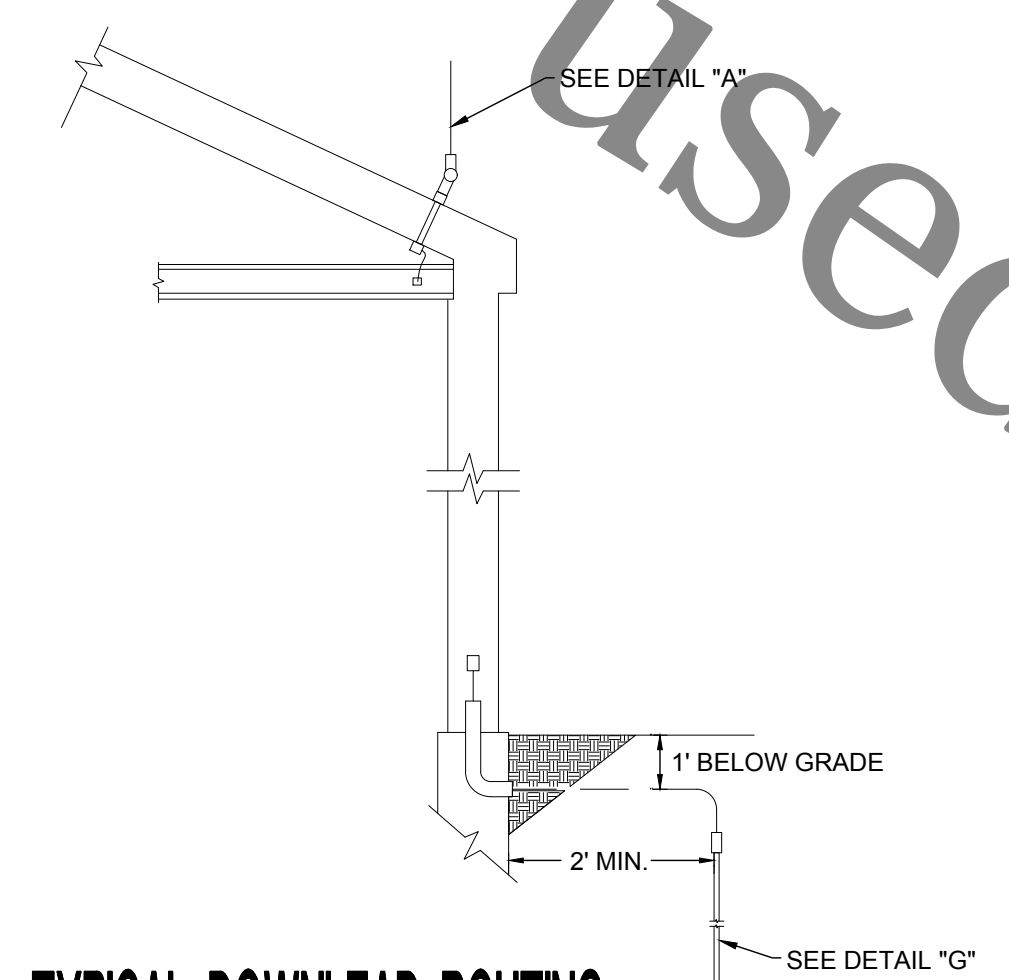


**SECONDARY UNIT-SUBSTATION BONDING**  
NO SCALE

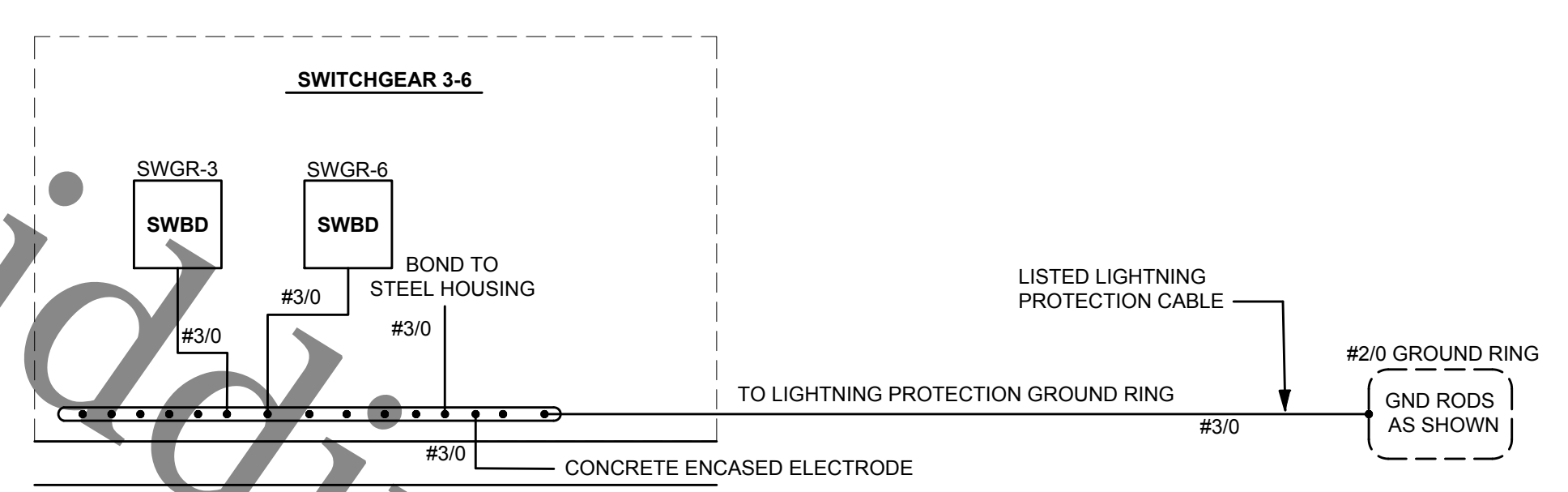
COMPLY WITH NEC 250.30(4) AND PROJECT SPECIFICATIONS FOR GROUPING COMMON GROUNDING ELECTRODES



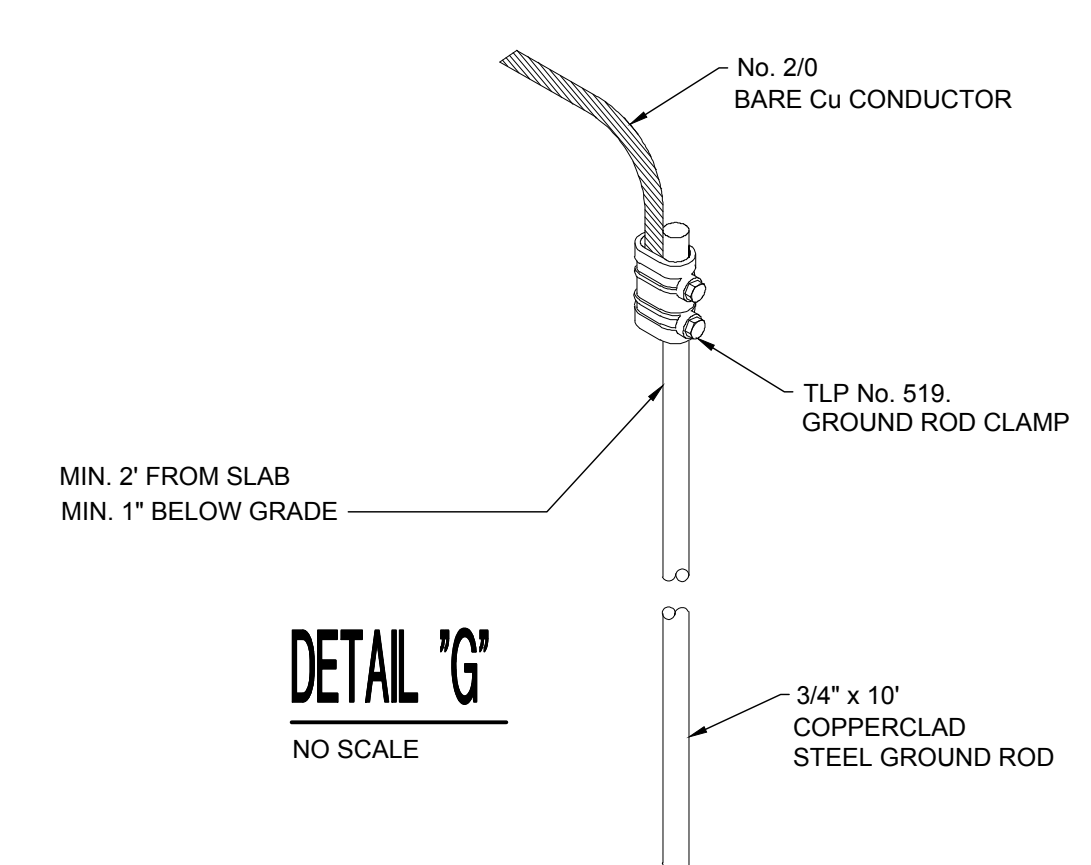
**CABLE FASTENERS**  
NO SCALE



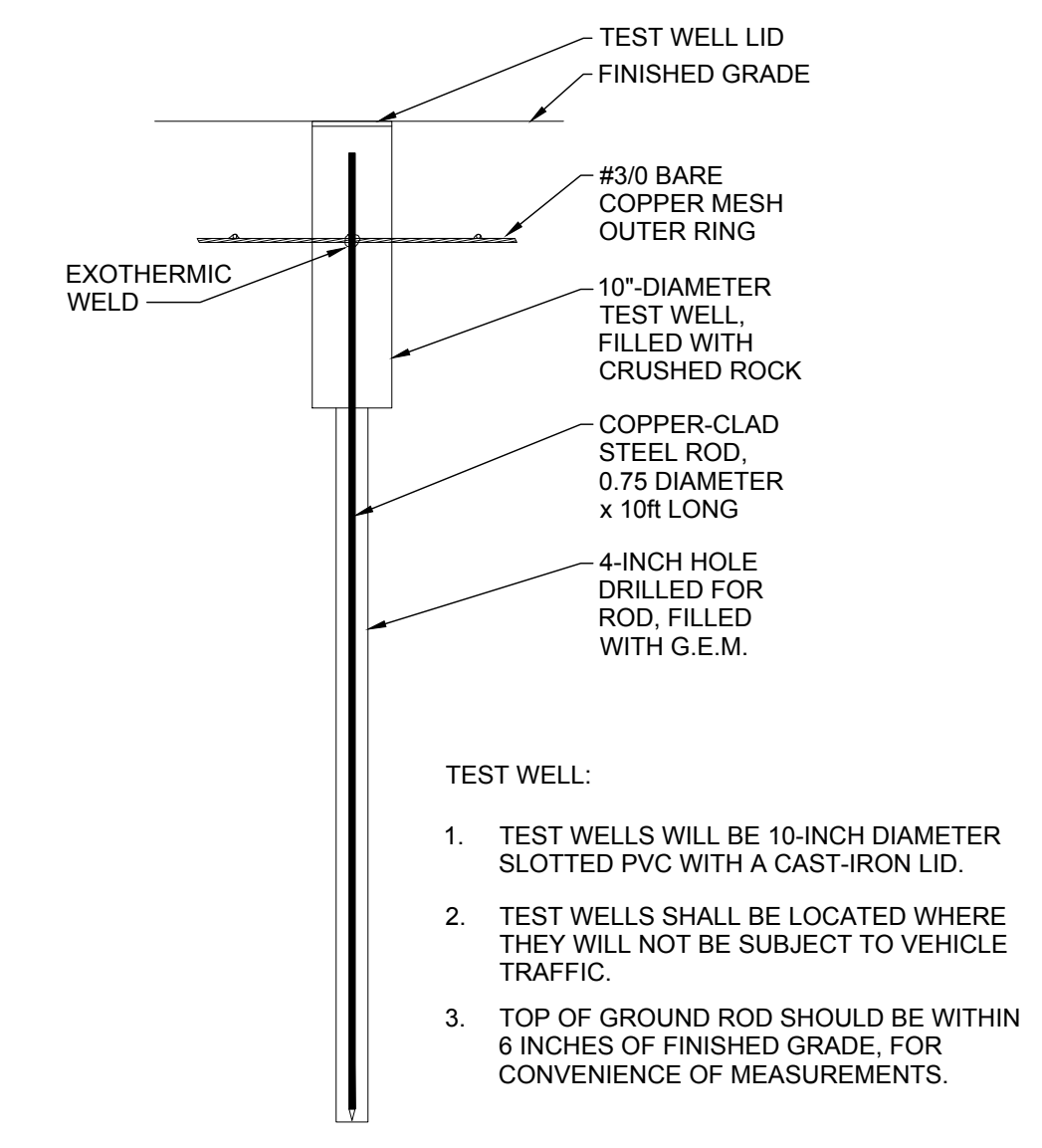
**TYPICAL DOWNLOAD ROUTING**  
NO SCALE



**GROUNDING DIAGRAM**  
NO SCALE

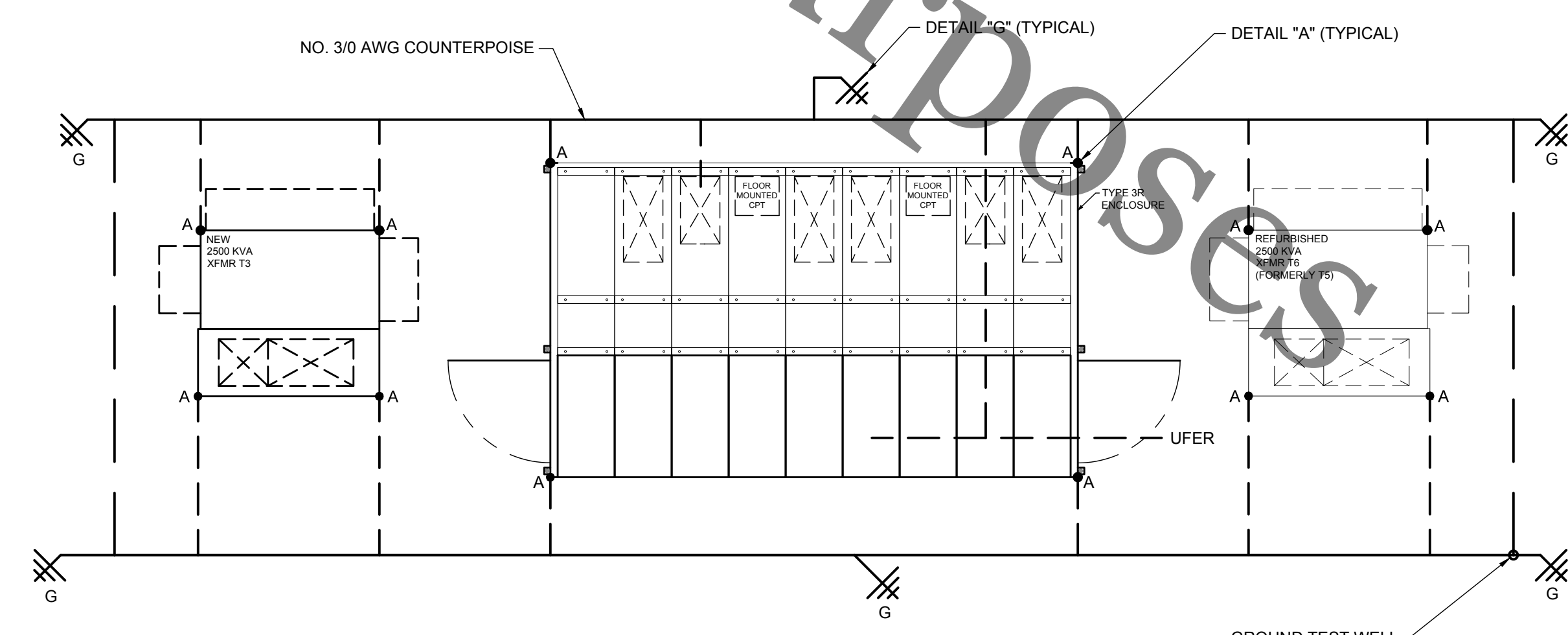


**DETAIL "G"**  
NO SCALE



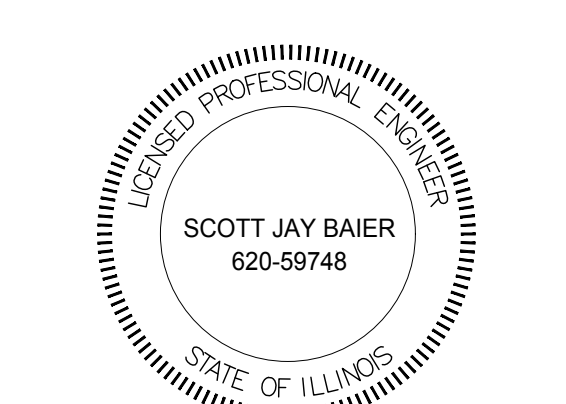
**GROUND TEST WELL**  
NO SCALE

- TEST WELL:
- TEST WELLS WILL BE 10-INCH DIAMETER SLOTTED PVC WITH A CAST-IRON LID.
  - TEST WELLS SHALL BE LOCATED WHERE THEY WILL NOT BE SUBJECT TO VEHICLE TRAFFIC.
  - TOP OF GROUND ROD SHOULD BE WITHIN 6 INCHES OF FINISHED GRADE, FOR CONVENIENCE OF MEASUREMENTS.



**GROUNDING AND LIGHTNING PROTECTION**  
SCALE: 1/4" = 1'-0"

No.	Description	Date
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SIGNATURE  
DATE  
LICENSE EXPIRES 9-30-2024

**SWITCHGEAR 3-6  
GROUNDING  
DETAILS**

Project Number RRWRD 2023 (SDSE 19-006)  
Date 28 MAY 2019  
Drawn By SDS  
Checked By SDSE

**E111**  
Scale SEE PLAN