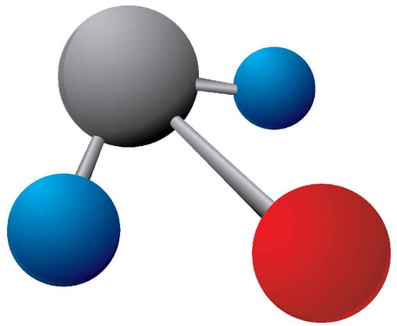
WILLISTON WATER RESOURCE RECOVERY FACILITY (WRRF) REUSE PROJECT

PUMP STATION



Certification of Individual Project Design Disciplines Are Included On Their Individual Drawings, Respectively

PREPARED FOR:

City of Williston

LOCATION:

Williston, ND

DATE:

February 2026

AE2S PROJECT NO:

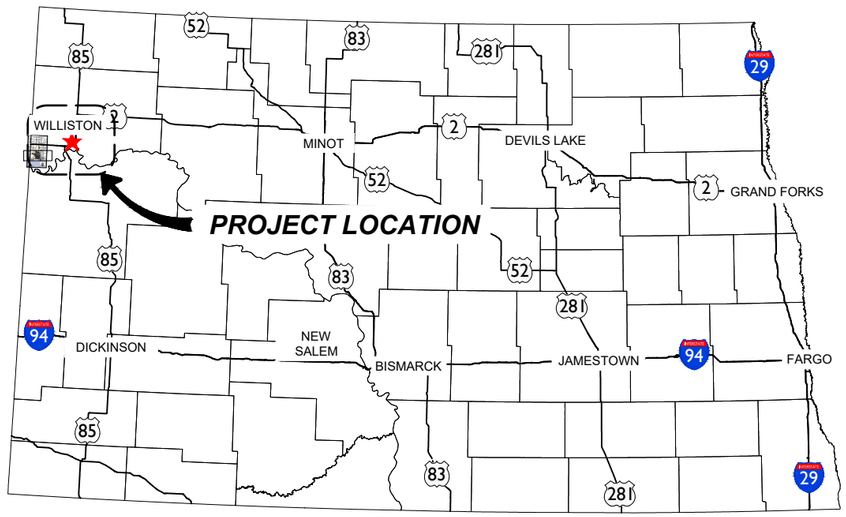
P00581-2025-003

ENGINEERING TEAM:

CIVIL ENGINEER
Advanced Engineering and Environmental Services, LLC

PROCESS ENGINEER
Advanced Engineering and Environmental Services, LLC

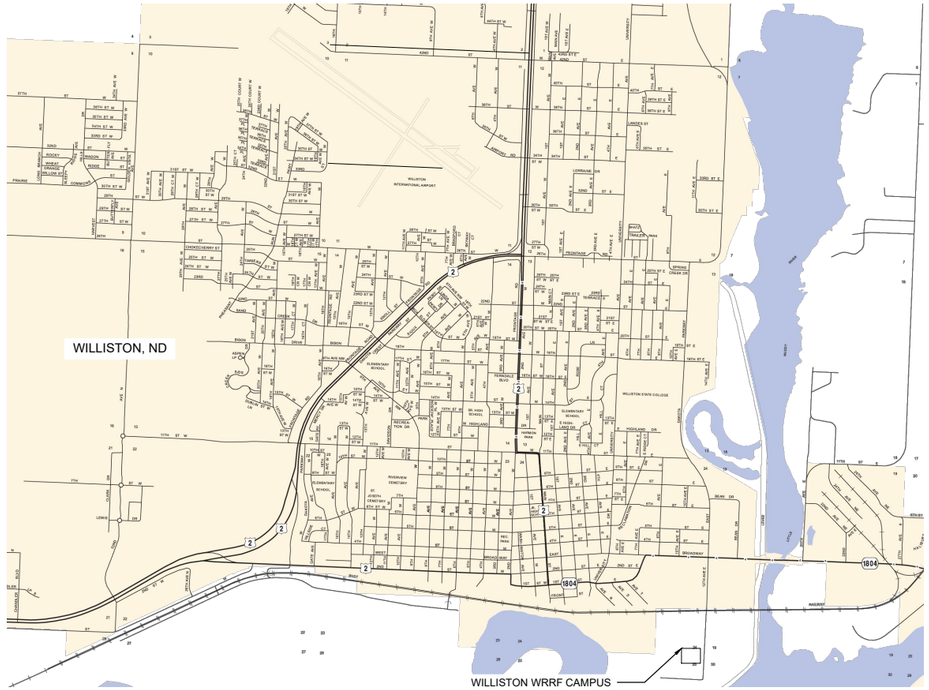
ELECTRICAL ENGINEER
Advanced Engineering and Environmental Services, LLC



STATE OF NORTH DAKOTA

1 G002 **PROJECT LOCATION MAP**
Williams County

NORTH



2 G002 **PROJECT VICINITY MAP**
Williams County

NORTH

3 G002 **PROJECT AERIAL MAP**
Williams County

NORTH

AE2S

Certification of Individual Project Design Disciplines Are Included On Their Individual Drawings, Respectively

REGISTERED PROFESSIONAL ENGINEER
KEVIN JOHNSON
PE-4964
02-20-2026
Date
NORTH DAKOTA

STATUS: **PRELIMINARY - NOT FOR CONSTRUCTION**

SYM	DATE	APPR

PROJECT TITLE:
WILLISTON WATER RESOURCE RECOVERY FACILITY (WRRF) REUSE PROJECT

Advanced Engineering and Environmental Services, LLC www.ae2s.com

SHEET TITLE:
LOCATION MAP

CLIENT:
CITY OF WILLISTON
WILLISTON, ND

PREPARED BY: RFM
CHECKED BY: KMJ
APPROVED BY: KMJ

PROJECT NO: P00581-2025-003
DATE: FEBRUARY 2026
ALT. PROJECT NO:
SHEET DESIGNATOR:
SHEET NO: **G002**

SHEET NUMBERING

SHEET SERIES	SERIES DESCRIPTION
000	SYMBOLS LEGEND, DRAFTING CONVENTIONS, NOTES, ETC.
100	PLAN VIEWS AND COMBINATION PLAN & PROFILE VIEW (HORIZONTAL VIEWS)
200	ELEVATIONS AND PROFILES (VERTICAL VIEWS)
300	SECTIONS (SECTION VIEWS, WALL SECTIONS)
400	LARGE SCALE VIEWS (SCALED UP REPRODUCTIONS OF PLANS, ELEVATIONS OR SECTIONS NOT IN DETAILS
500	DETAILS
600	SCHEDULES AND DIAGRAMS
700	

DRAWING INDEX

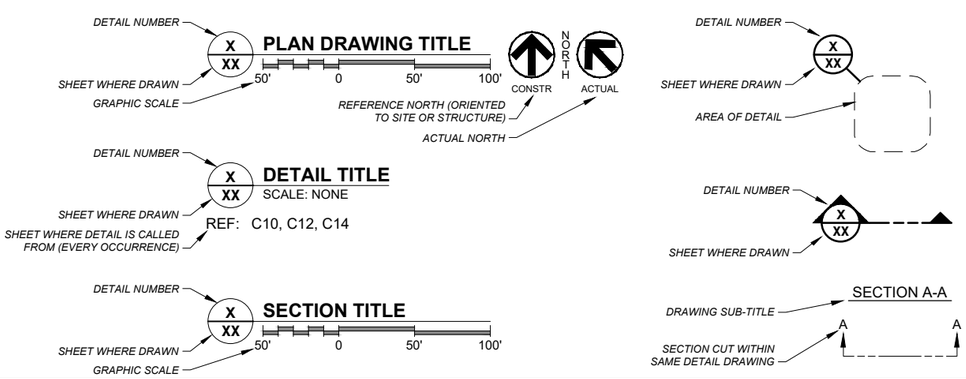
CIVIL ABBREVIATIONS

&	- AND	DWG.	- DRAWING	PC	- POINT OF CURVATURE
∠	- ANGLE	E.	- EAST	PC	- PRECAST
@	- AT	E-W	- EAST TO WEST	P.C.C.	- PORTLAND CEMENT CONCRETE
℄	- CENTERLINE	EA.	- EACH	PE	- POLYETHYLENE
°	- DEGREES	E.F.	- EACH FACE	PE or P.E.	- PLAIN END
Δ	- DELTA	EJ	- EXPANSION JOINT	PEP	- POLYETHYLENE PIPE
Ø	- DIAMETER	ELEC.	- ELECTRICAL	PI	- POINT OF INTERSECTION
□	- SQUARE	ELEV.	- ELEVATION	PO	- PUSH ON
±	- PLUS / MINUS	EP	- END OF PROJECT	POLY	
ABS	- ACRYLONITRILE-BUTADIENE-STYRENE	EQ.	- EQUAL	PRV	- PRESSURE REDUCING VALVE
ACI	- AMERICAN CONCRETE INSTITUTE	EVC	- END VERTICAL CURVE	PSI	- POUNDS PER SQUARE INCH
ACP	- ASBESTOS CEMENT PIPE	E.W.	- EACH WAY	PT	- POINT OF TANGENCY
ADD'L	- ADDITIONAL	EXIST.	- EXISTING	PLV	- PLUG VALVE
ADDM.	- ADDENDUM	EXP.	- EXPANSION	PVC	- POLYVINYL CHLORIDE
ADJ.	- ADJUSTABLE	FDN.	- FOUNDATION	PVI	- POINT OF VERTICAL INTERSECTION
AGGR.	- AGGREGATE	FIN.	- FINISH	R or RAD	- RADIUS
ALT.	- ALTERNATE	FL	- FLOW LINE OR FLANGE	R.	- RISER
APPR.	- APPROACH	FLR.	- FLOOR	RCCP	- REINFORCED CONCRETE CYLINDER PIPE
APPROX.	- APPROXIMATE	FM	- FORCE MAIN	RCP	- REINFORCED CONCRETE PIPE
APPURT.	- APPURTENANCE	FRP	- FIBERGLASS REINFORCED PLASTIC	RDL	- ROOF DRAIN LINE
ARCH.	- ARCHITECT or ARCHITECTURAL	FT.	- FOOT	RES	- RESERVOIR
AR MH	- AIR RELEASE MANHOLE	G&S	- GROOVE AND SHOULDER	REQ'D.	- REQUIRED
ARV	- AIR RELEASE VALVE	GA.	- GAGE	REQ'MTS.	- REQUIREMENTS
ASSY.	- ASSEMBLY	GALV.	- GALVANIZED	RJ	- RESTRAINED JOINT
ASTM	- AMERICAN SOCIETY FOR TESTING MATERIALS	GR.	- GRADE	S.	- SOUTH
AVE	- AVENUE	GRD.	- GROUND	S-N	- SOUTH TO NORTH
AVV	- AIR / VACUUM VALVE	GV	- GATE VALVE	SAN	- SANITARY
BFV	- BUTTERFLY VALVE	H	- HATCH	SCH.	- SCHEDULE
BITUM.	- BITUMINOUS	HDD	- HORIZONTAL DIRECTIONAL DRILLING	SD	- STORM DRAIN
BL	- BUILDING LINE	HDPE	- HIGH DENSITY POLYETHYLENE	SECT.	- SECTION
BLDG.	- BUILDING	HORZ.	- HORIZONTAL	SF	- SQUARE FEET
BLK.	- BLOCK	HR.	- HANDRAIL	SIM.	- SIMILAR
B.O.	- BY OTHERS	HT.	- HEIGHT	SS	- SANITARY SEWER
BP	- BEGINNING OF PROJECT	HYD	- HYDRANT	SSSL	- SANITARY SEWER SERVICE LEAD
BRG.	- BEARING	I.D.	- INSIDE DIAMETER	ST	- STREET
BSMT.	- BASEMENT	I.E.	- INVERT ELEVATION	STA	- STATION
BVC	- BEGIN VERTICAL CURVE	IN.	- INCH	STD.	- STANDARD
C-C	- CENTER TO CENTER	INSUL	- INSULATION	STL.	- STEEL
C&G	- CURB AND GUTTER	INV.	- INVERT	STN. STL.	- STAINLESS STEEL
CB	- CATCH BASIN	JT.	- JOINT	STR.	- STRUCTURAL
CDF	- CONTROLLED DENSITY FILL	K	- RATE OF CURVATURE	STRUCT	- STRUCTURAL
CF	- CUBIC FEET	L	- LENGTH OF CURVE	SUP.	- SUPPORT
CI	- CAST IRON	LB	- POUND	SWPP	- STORM WATER POLLUTION PROTECTION
CIP	- CAST IRON PIPE	LCCP	- LINED CONCRETE CYLINDER PIPE	SY	- SQUARE YARD
C.I.P.	- CAST IN PLACE	LF	- LINEAR FEET	TEMP.	- TEMPORARY
CJ	- CONSTRUCTION JOINT	LVC	- LENGTH OF VERTICAL CURVE	THK.	- THICK
CL	- CENTERLINE	LVL	- LEVEL	TOC	- TOP OF CASTING
CMP	- CORRUGATED METAL PIPE	MAX.	- MAXIMUM	T.O.P.	- TOP OF PIPE
CO	- CLEANOUT	MECH	- MECHANICAL	TOS	- TOP OF STEEL
CONC.	- CONCRETE	MFG.	- MANUFACTURER	TYP.	- TYPICAL
CONSTR.	- CONSTRUCTION	MH	- MANHOLE	UON	- UNLESS OTHERWISE NOTED
CONT.	- CONTINUOUS	MJ or M.J.	- MECHANICAL JOINT	USACE	- U.S. ARMY CORPS OF ENGINEERS
CNTRL.	- CONTROL	MIN.	- MINIMUM	VCP	- VITRIFIED CLAY PIPE
CSP	- CORRUGATED STEEL PIPE	MNDOT	- MINNESOTA DEPARTMENT OF TRANSPORTATION	VERT.	- VERTICAL
CSV	- CURB STOP VALVE	MTDOT	- MONTANA DEPARTMENT OF TRANSPORTATION	W.	- WEST
CTR	- CENTER	MTR.	- METER	W-E	- WEST TO EAST
CU	- COPPER	N.	- NORTH	W/	- WITH
CY	- CUBIC YARD	N-S	- NORTH TO SOUTH	W/O	- WITHOUT
DEPR.	- DEPRESSION	NA	- NOT APPLICABLE	WM	- WATERMAIN
DTL	- DETAIL	NDDOT	- NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	WRF	- WATER RECLAMATION FACILITY
DI or D.I.	- DUCTILE IRON	NPT	- NIPPLE	WSL	- WATER SERVICE LEAD
DIA.	- DIAMETER	NTS	- NOT TO SCALE	WTF	- WATER TREATMENT FACILITY
DIM.	- DIMENSION	O.C.	- ON CENTER	WTP	- WATER TREATMENT PLANT
DIP	- DUCTILE IRON PIPE	O.D.	- OUTSIDE DIAMETER	WWF	- WELDED WIRE FABRIC
DIST.	- DISTANCE	OH.	- OVERHEAD	WWTP	- WASTE WATER TREATMENT PLANT
DR	- DRIVE	OPNG.	- OPENING		
DRWY	- DRIVEWAY	OSHA	- OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION		

SHEET DESIGNATORS

SHEET DESIGNATOR	DESCRIPTION	SHEET DESIGNATOR	DESCRIPTION	SHEET DESIGNATOR	DESCRIPTION
GEN	GENERAL SHEETS				
SW	SITE WORK				
SD	STANDARD DETAILS				

DRAWING, SECTION AND DETAIL CONVENTIONS



Certification of Individual Project Design Disciplines Are Included On Their Individual Drawings, Respectively

REGISTERED PROFESSIONAL ENGINEER
KEVIN JOHNSON
PE-4964
02-20-2026
Date
NORTH DAKOTA

STATUS: PRELIMINARY - NOT FOR CONSTRUCTION

SYM	DATE	APPR

GENERAL NOTES

1. THE INFORMATION DEPICTED WITHIN THESE DRAWINGS IS COMPILED FROM LEGACY DRAWINGS AND FIELD SURVEYS FROM PREVIOUS PROJECTS, SITE VISITS, CONSTRUCTION OBSERVATION TIES AND PHOTOGRAPHS, AND THE MEMORIES OF CITY STAFF AND CONSTRUCTION OBSERVERS.
2. THE LOCATIONS OF KNOWN UNDERGROUND UTILITIES ARE SHOWN ON THE CONSTRUCTION DRAWINGS IN AN APPROXIMATE WAY ONLY. ADDITIONAL ACTIVE AND INACTIVE UTILITIES MAY BE PRESENT.
3. COORDINATE ALL ON-SITE STAGING WITH OWNER TO AVOID CONFLICTS WITH EXISTING UTILITIES.
4. MAINTAIN OWNER ACCESS TO SITE AT ALL TIMES.

CIVIL DRAWING SYMBOLS

100'-0"± FLOOR	EXISTING ELEVATION IN SECTION VIEW (CONTRACTOR TO VERIFY)
100'-0"± FLOOR	EXISTING ELEVATION IN PLAN VIEW (CONTRACTOR TO VERIFY)
108'-0" WALL	DESIGN ELEVATION IN SECTION VIEW
108'-0" FLOOR	DESIGN ELEVATION IN PLAN VIEW
	BREAKLINE
	DIRECTION OF FLOW
1	EXISTING NOTES
1	DEMOLITION NOTES
1	CONSTRUCTION NOTES
1	PIPING SCHEDULE ITEMS
EQUIP	EQUIPMENT SCHEDULE ITEMS

PROJECT TITLE:
WILLISTON WATER RESOURCE RECOVERY FACILITY (WRRF) REUSE PROJECT

Advanced Engineering and Environmental Services, LLC www.ae2s.com

SHEET TITLE:
SHEET INDEX AND ABBREVIATIONS

CLIENT: CITY OF WILLISTON, WILLISTON, ND

PREPARED BY: RFM
CHECKED BY: KMJ
APPROVED BY: KMJ

PROJECT NO: P00581-2025-003
DATE: FEBRUARY 2026
ALT. PROJECT NO:
SHEET DESIGNATOR:
SHEET NO: G003

WATER

DESCRIPTION	EXISTING	NEW
PIPE		
WATER MAIN	W	
WATER SERVICE		
STRUCTURES		
MANHOLE	W	W
METER MANHOLE	M	M
ARV MANHOLE		
WELL	WW	WW
MONITORING WELL	MW	MW
PRV MANHOLE		
WATER HANDHOLE	W	W
VAULT	W	W
VALVES		
CURBSTOP		
GATE		
BUTTERFLY		
PLUG		
CHECK		
BALL		
HYDRANTS		
FIRE		
ARV		
BLOW OFF		
FITTINGS		
11.25° BEND		
22.50° BEND		
30° BEND		
45° BEND		
60° BEND		
90° BEND		
WYE (R)		
WYE (L)		
CAP		
COUPLING		
CROSS		
PLUG		
REDUCER		
TEE		
SADDLE TAP		

SANITARY

DESCRIPTION	EXISTING	NEW
PIPE		
SANITARY MAIN	SS	
SANITARY SERVICE		
STRUCTURES		
MANHOLE	S	S
CLEAN OUT	CO	CO
METER MANHOLE	M	M
SEPTIC TANK	ST	ST
VAULT	S	S
LIFTSTATION	L	L
VALVES		
GATE		
BUTTERFLY		
PLUG		
FITTINGS		
WYE (R)		
WYE (L)		
PLUG		
CAP		

STORM

DESCRIPTION	EXISTING	NEW
PIPE		
STORM MAIN	SD	
STORM LEAD		
STRUCTURES		
MANHOLE	D	D
AREA INLET		
BEEHIVE INLET		
CURB INLET		
DOUBLE CURB INLET		
OUTFALL		

GAS

DESCRIPTION	EXISTING	NEW
LINES		
NATURAL GAS	G	G
STRUCTURES		
MANHOLE	G	G
METER	G	G
VALVES		
GATE VALVE		

SITE

DESCRIPTION	EXISTING	NEW
VEGETATION		
CONIFEROUS TREE (LARGE)		
CONIFEROUS TREE (SMALL)		
DECIDUOUS TREE (LARGE)		
DECIDUOUS TREE (SMALL)		
SHRUB		
STUMP		
TREE LINE		
SIGNAGE		
STREET SIGN		
MILE POST	MP	MP
SITE		
BUILDING		
CURB		
CONCRETE		
FENCES		
BARBED WIRE		
CHAIN LINK		
WOOD		
VINYL		
WOVEN WIRE		
GUARD RAIL		
SILT	SF	SF
SUPER SILT	SSF	SSF
GATE POST	GP	
TOPOLOGY		
CONTOURS	900	900

ELECTRICAL

DESCRIPTION	EXISTING	NEW
LINES		
ELECTRIC	E	E
OVERHEAD	OHE	OHE
UNDERGROUND	UGE	UGE
STRUCTURES		
MANHOLE	E	E
HANDHOLE	E	E
UTILITY POLE		
GUY ANCHOR		
LIGHT POST		
PUSH TO WALK POST	P	P
STREET LIGHT		
SIGNAL		
SIGNAL WITH ARM		

COMMUNICATIONS

DESCRIPTION	EXISTING	NEW
LINES		
COMMUNICATIONS	C	
FIBER OPTIC	FO	
TELEPHONE	T	
CABLE TV	CATV	
CLOSED CIRCUIT TV	CCTV	
STRUCTURES		
MANHOLE	C	C
TELEPHONE MANHOLE	T	T
TELEPHONE PEDESTAL	T	T
TELEPHONE FIBER OPTIC PEDESTAL	FO	FO
TELEVISION PEDESTAL	TV	TV
UNKNOWN PEDESTAL	U	U

DEMOLITION

DESCRIPTION	EXISTING	NEW
LINES		
FEATURES TO BE REMOVED		
FEATURES TO BE ABANDONED		
REMOVE CURB & GUTTER		
STRUCTURES		
REMOVE TREE OR SHRUB		
AREA		
ITEMS TO BE REMOVED		

AE2S

Certification of Individual Project Design Disciplines Are Included On Their Individual Drawings, Respectively

REGISTERED PROFESSIONAL ENGINEER
KEVIN JOHNSON
PE-4964
02-20-2026
Date
NORTH DAKOTA

STATUS: PRELIMINARY - NOT FOR CONSTRUCTION

APPR	SYM	DATE

GENERAL NOTES

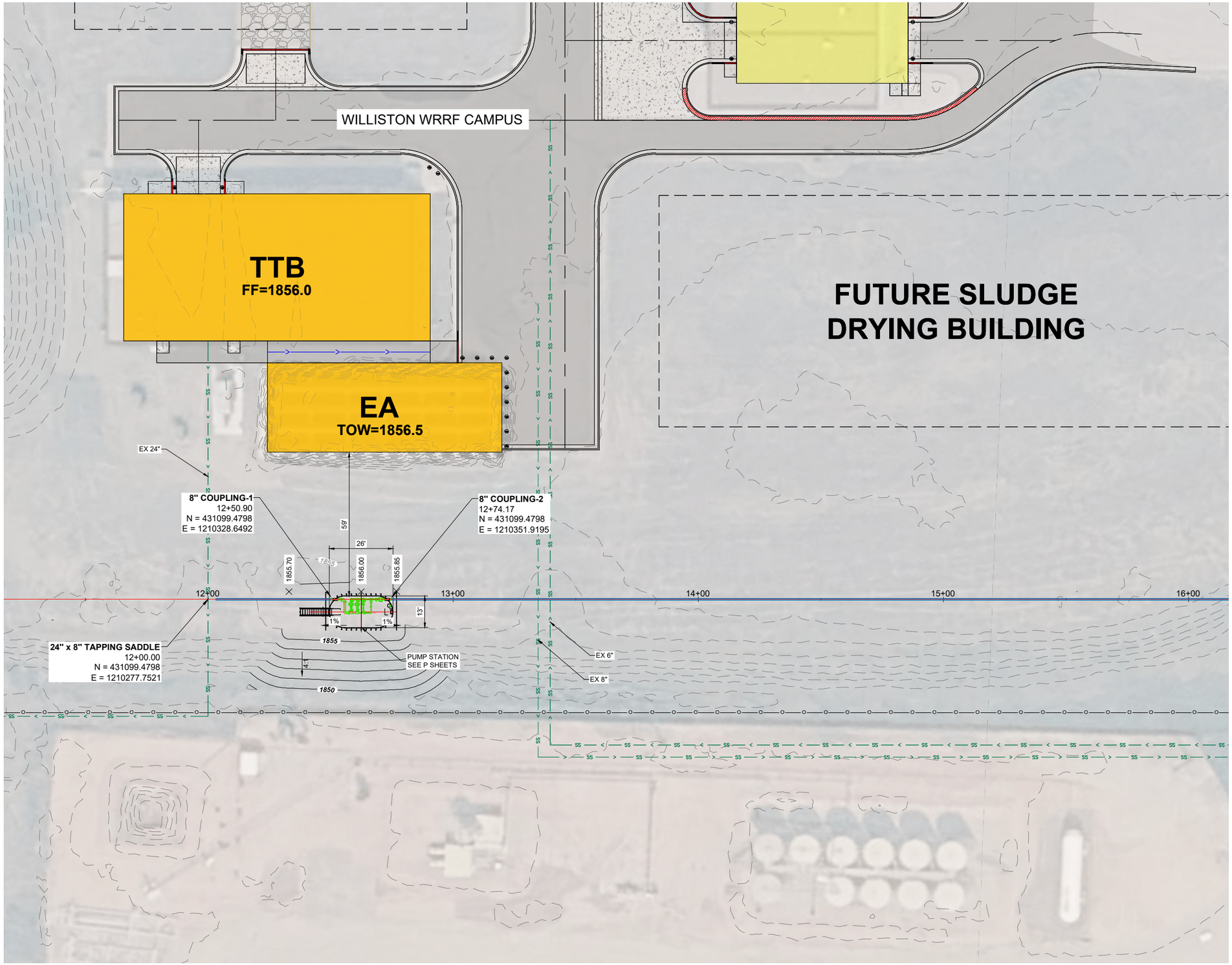
1. THIS LEGEND SHEET IS FOR VISUAL REFERENCE OF THE SYMBOLS AND LINETYPES USED ON THIS PROJECT. SOME OF THE SYMBOLS AND LINETYPES MAY NOT BE USED BY THIS PARTICULAR PROJECT.

PROJECT TITLE:
WILLISTON WATER RESOURCE RECOVERY FACILITY (WRRF) REUSE PROJECT

Advanced Engineering and Environmental Services, LLC www.ae2s.com

SHEET TITLE:
LEGEND

CLIENT: CITY OF WILLISTON, WILLISTON, ND	PREPARED BY: RFM
	CHECKED BY: KMJ
	APPROVED BY: KMJ
PROJECT NO: P00581-2025-003	SHEET DESIGNATOR:
DATE: FEBRUARY 2026	SHEET NO: G004
ALT. PROJECT NO:	



AE2S
Certification of Individual Project Design Disciplines Are Included On Their Individual Drawings, Respectively

REGISTERED PROFESSIONAL ENGINEER
KEVIN JOHNSON
PE-4964
02-20-2026
Date
NORTH DAKOTA

STATUS: PRELIMINARY - NOT FOR CONSTRUCTION

SYM	DATE	APPR

NORTH

0 20
Scale in Feet

GENERAL NOTES

1. CIVIL SITE WORK AND SITE PIPING ARE SHOWN FOR REFERENCE ONLY AND SHALL BE COMPLETED UNDER A SEPARATE CONTRACT. THIS CONTRACT PERTAINS TO THE PRE-PROCUREMENT OF THE PREFABRICATED PUMP STATION AND ALL CONTENTS THEREIN AS INDICATED ON THE PROCESS DRAWINGS AND AS INDICATED IN THE SPECIFICATIONS. INSTALLATION OF THE PREFABRICATED PUMP STATION SHALL BE COMPLETED UNDER A SEPARATE CONTRACT.

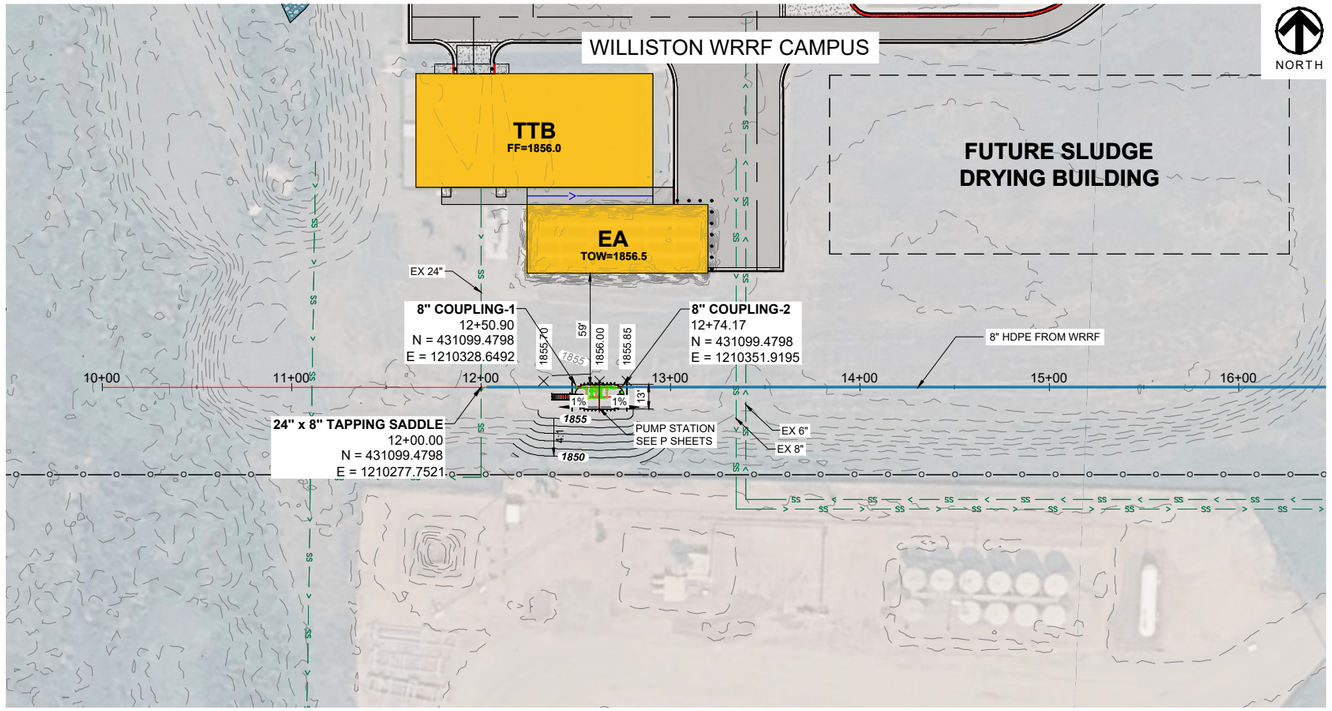
PROJECT TITLE:
WILLISTON WATER RESOURCE RECOVERY FACILITY (WRRF) REUSE PROJECT
Advanced Engineering and Environmental Services, LLC www.ae2s.com

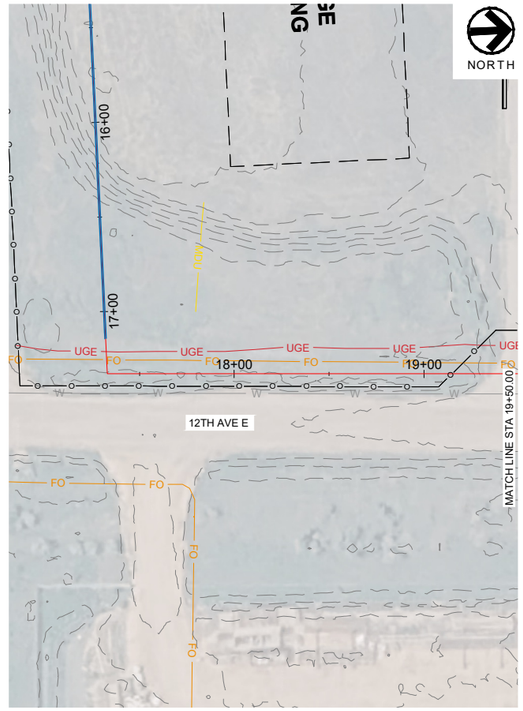
SHEET TITLE:
PUMP STATION SITE PLAN

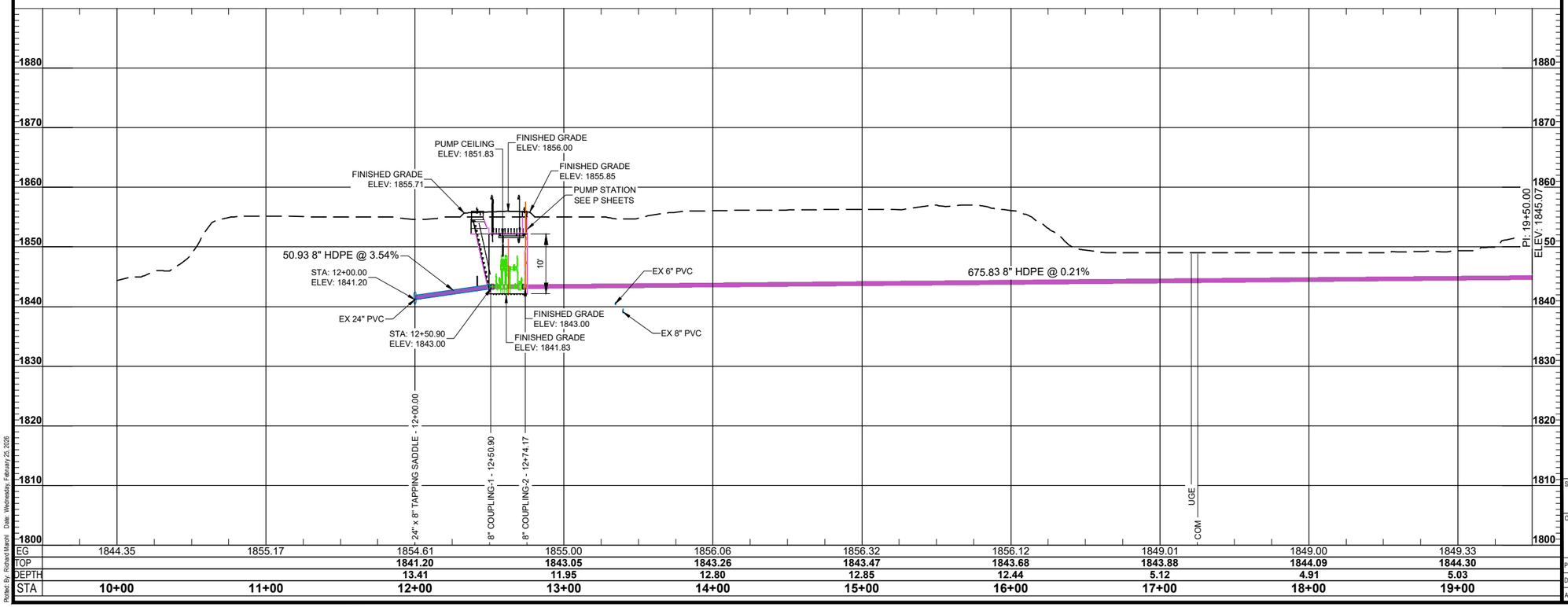
CLIENT:
CITY OF WILLISTON
WILLISTON, ND

PREPARED BY: RFM
CHECKED BY: KMJ
APPROVED BY: KMJ

PROJECT NO: P00581-2025-003
DATE: FEBRUARY 2026
ALT. PROJECT NO:
SHEET DESIGNATOR:
SHEET NO: C101







STA	10+00	11+00	12+00	13+00	14+00	15+00	16+00	17+00	18+00	19+00
EG	1844.35	1855.17	1854.61	1855.00	1856.06	1856.32	1856.12	1849.01	1849.00	1849.33
TOP			1841.20	1843.05	1843.26	1843.47	1843.68	1843.88	1844.09	1844.30
DEPTH			13.41	11.95	12.80	12.85	12.44	5.12	4.91	5.03

Certification of Individual Project Design Disciplines Are Included On Their Individual Drawings, Respectively

REGISTERED PROFESSIONAL ENGINEER
KEVIN JOHNSON
PE-4964
02-20-2026
Date
NORTH DAKOTA

STATUS: PRELIMINARY - NOT FOR CONSTRUCTION

SYM	DATE	APPR

0 40
Scale in Feet

GENERAL NOTES

1. CIVIL SITE WORK AND SITE PIPING ARE SHOWN FOR REFERENCE ONLY AND SHALL BE COMPLETED UNDER A SEPARATE CONTRACT. THIS CONTRACT PERTAINS TO THE PRE-PROCUREMENT OF THE PREFABRICATED PUMP STATION AND ALL CONTENTS THEREIN AS INDICATED ON THE PROCESS DRAWINGS AND AS INDICATED IN THE SPECIFICATIONS. INSTALLATION OF THE PREFABRICATED PUMP STATION SHALL BE COMPLETED UNDER A SEPARATE CONTRACT.

UTILITY AND SUE DATA

STA	TYPE	SIZE	MATERIAL	OWNER	LEVEL
12+00.00	SS	24"	PVC	**CITY**	**D**
13+34.67	SS	8"	PVC	**CITY**	**D**
13+39.67	SS	6"	PVC	**CITY**	**D**
17+21.15	UGE	UNK	UNK	**MDU**	**D**
17+25.41	COM	UNK	FO	**NCC**	**D**

PROJECT TITLE:
WILLISTON WATER RESOURCE RECOVERY FACILITY (WRRF) REUSE PROJECT

SHEET TITLE:
PUMP STATION PLAN AND PLOT

CLIENT:
CITY OF WILLISTON
WILLISTON, ND

PREPARED BY: RFM
CHECKED BY: KMJ
APPROVED BY: KMJ

PROJECT NO: P00581-2025-003
DATE: FEBRUARY 2026
ALT. PROJECT NO:
SHEET DESIGNATOR:
SHEET NO: **C301**

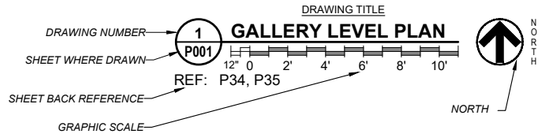
Advanced Engineering and Environmental Services, LLC www.ae2s.com

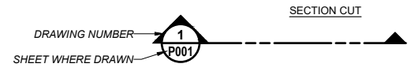
File: C:\Users\RMarohl\DOCACO\cad\AE2S\00581-2025-003 Williston WRRF Water Reuse - Main Golf\Project Files\01-Civil\Plan Sheets\xC3-Pump Station.dwg
Plotted: By: Richard Marohl Date: Wednesday, February 25, 2026

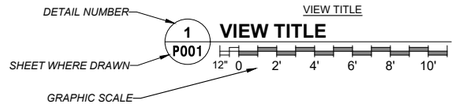
GENERAL PROCESS NOTES

1. PROCESS ITEMS IDENTIFIED ON DRAWINGS SHALL BE NEW AND FURNISHED AND INSTALLED UNLESS OTHERWISE NOTED.
2. CONTRACTOR SHALL NOTE THAT ADDITIONAL CONSTRUCTION NOTES MAY BE INCLUDED ON INDIVIDUAL DRAWINGS.
3. AE2S PROCESS DRAWINGS ARE INTENDED TO BE REPRODUCED IN COLOR TO ASSIST IN IDENTIFYING PROCESS PIPING AND SELECT ITEMS. AE2S ASSUMES NO LIABILITY FOR CONTRACTORS CHOOSING TO REPRODUCE THESE DRAWINGS IN BLACK AND WHITE OR AT A SCALE WHICH REDUCES LEGIBILITY.
4. NOT ALL EQUIPMENT, PIPING, ACTUATORS, CONDUITS, PLUMBING, ETC. IS SHOWN. CONTRACTOR IS RESPONSIBLE FOR VERIFICATION (LOCATIONS), REMOVAL, MODIFICATION, RELOCATION, RE-INSTALLATION, ETC. OF ALL MISCELLANEOUS EQUIPMENT PIPING, CONDUIT, PLUMBING, ETC. REQUIRED TO ACCOMMODATE THE INSTALLATION OF IMPROVEMENTS.
5. NOT ALL PIPE HANGERS AND SUPPORTS ARE SHOWN ON THE DRAWINGS. CONTRACTOR SHALL FIELD LOCATE PIPE SUPPORT SPACING, LAYOUT, AND TYPE TO AVOID INTERFERENCES. SEE SPECIFICATIONS FOR MAXIMUM SPACING. ENGINEER SHALL APPROVE PIPE SUPPORT LAYOUTS PRIOR TO CONSTRUCTION. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ENSURE THAT ALL PIPING IS ADEQUATELY ANCHORED AND SUPPORTED TO PREVENT EXCESS MOVEMENT DURING TESTING AND OPERATION OF PIPING.
6. THE CONTRACTOR SHALL ASSUME FULL RESPONSIBILITY FOR ANY ADDITIONAL COSTS WHICH MAY RESULT FROM UNAUTHORIZED DEVIATIONS FROM THE CONTRACT DOCUMENTS.
7. SIZE OF FITTINGS AND VALVES SHALL CORRESPOND TO THE SIZE OF ADJACENT PIPING. JOINTS AND FITTING MATERIAL SHALL BE AS SHOWN FOR ADJACENT PIPING.
8. PROVIDE PROPER PLUGS, CAPS, BLIND FLANGES, AND RESTRAINTS WHEN ANY PIPING IS TERMINATED. VERIFY SIZE WITH ADJACENT PIPING AND FITTINGS.
9. CONTRACTOR SHALL PROVIDE ALL TRANSITION FITTINGS AND APPURTENANCES REQUIRED FOR TRANSITIONS BETWEEN DIFFERENT PIPE MATERIALS AND JOINT TYPES.
10. ALL SUBMERGED ANCHOR BOLTS, NUTS, FASTENERS, ETC., SHALL BE 304 STAINLESS STEEL UNLESS OTHERWISE NOTED.
11. USE OF UNI-FLANGES SHALL ONLY BE ALLOWED WITH PRIOR APPROVAL OF ENGINEER.
12. ALL PRODUCTS THAT MAY COME INTO CONTACT WITH WATER INTENDED FOR PUBLIC WATER SYSTEMS SHALL MEET AMERICAN NATIONAL STANDARD INSTITUTE (ANSI) AND NATIONAL SANITATION FOUNDATION (NSF) STANDARD 61. A PRODUCT WILL BE CONSIDERED AS MEETING THIS STANDARD IF CERTIFIED BY NSF, THE UNDERWRITERS LABORATORIES (UL) OR OTHER ORGANIZATIONS ACCREDITED BY ANSI TO TEST AND CERTIFY SUCH PRODUCTS. PRODUCT SHALL BE STAMPED OR HAVE AN ATTACHED PERMANENT LABEL. PIPES SHALL HAVE THE LABEL OR STAMP ALONG THE FULL LENGTH OF THE PIPE.
13. THE PROCESS DRAWINGS INDICATE REQUIRED PIPE SIZES, ELEVATIONS, AND THE EXTENT AND GENERAL ARRANGEMENT FOR PROCESS PIPING AND EQUIPMENT. PRIOR TO THE FABRICATION OR INSTALLATION OF ANY PIPING OR EQUIPMENT THE CONTRACTOR SHALL CONSULT ALL DRAWINGS AND CONSTRUCTION TRADES TO ACQUAINT SELF WITH THE MATERIALS, FINISHES, AND LOCATIONS OF EXISTING AND NEW CEILINGS, STRUCTURAL MEMBERS, PIPES, DUCTS, LIGHTING FIXTURES, CONDUITS, ETC. WHICH MAY AFFECT THE INSTALLATION. COORDINATE THE WORK WITH OTHER TRADES AND MAKE MODIFICATIONS IN LAYOUT TO AVOID CONFLICT WITH THE WORK OF OTHER TRADES.
14. VERIFY FINAL VALVE OPERATOR / ACTUATOR ORIENTATION WITH ENGINEER.
15. NOT ALL PIPING FLOOR AND WALL PENETRATIONS ARE SHOWN. CONTRACTOR IS RESPONSIBLE FOR PROVIDING THE PROPER PENETRATION INCLUDING CONCRETE CORING, FLOOR SLEEVES, LINK-TYPE SEALS, CAULKING, AND GROUTING.

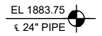
DRAWING, SECTION, AND DETAIL CONVENTIONS



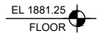




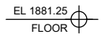
DRAWING SYMBOLS LEGEND



NEW ELEVATION & LOCATION IN SECTION VIEW
CENTERLINE ELEVATION

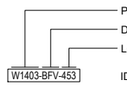


NEW ELEVATION & LOCATION IN SECTION VIEW
FLOOR, WALL, OR SURFACE ELEVATION



EXISTING ELEVATION & LOCATION IN SECTION VIEW
FLOOR, WALL, OR SURFACE ELEVATION

BREAKLINE (OBJECT CONTINUES, DRAWING ENDS)



IDENTIFICATION TAG

SCHEDULE NOTE FOR PIPE, FITTINGS, OR EQUIPMENT

CONSTRUCTION NOTE
CONSTRUCTION NOTE CALL-OUT WILL BE PLACED AT THE NEAREST POSSIBLE LOCATION TO THE WORK IT IS DESCRIBING.

DEMOLITION NOTE
DEMOLITION NOTE CALL-OUT WILL BE PLACED AT THE NEAREST POSSIBLE LOCATION TO THE WORK IT IS DESCRIBING.

WATER FLOW DIRECTION

INTAKE AIR FLOW DIRECTION

EXHAUST AIR FLOW DIRECTION

AE2S

Certification of Individual Project Design Disciplines Are Included On Their Individual Drawings, Respectively

REGISTERED PROFESSIONAL ENGINEER
KEVIN JOHNSON
PE-4964
02-20-2026
Date
NORTH DAKOTA

STATUS: PRELIMINARY - NOT FOR CONSTRUCTION

SYM	DATE	APPR

PAINTING REQUIREMENTS

INTERIOR	TWO COATS - 9MIL DRY TOTAL TNEMEC SERIES 66
EXTERIOR	THREE COATS - 16MIL DRY TOTAL TNEMEC SERIES 66
PIPING EXTERIOR	TWO COATS - 9MIL DRY TOTAL TNEMEC SERIES 66, COLOR TO BE SAFETY BLUE.

GENERAL NOTES

1. COORDINATE FINAL LOCATIONS OF HALF-COUPLINGS WITH ENGINEER DURING SUBMITTAL PROCESS.

PROJECT TITLE:
WILLISTON WATER RESOURCE RECOVERY FACILITY (WRRF) REUSE PROJECT

Advanced Engineering and Environmental Services, LLC www.ae2s.com

SHEET TITLE:
NOTES AND LEGEND

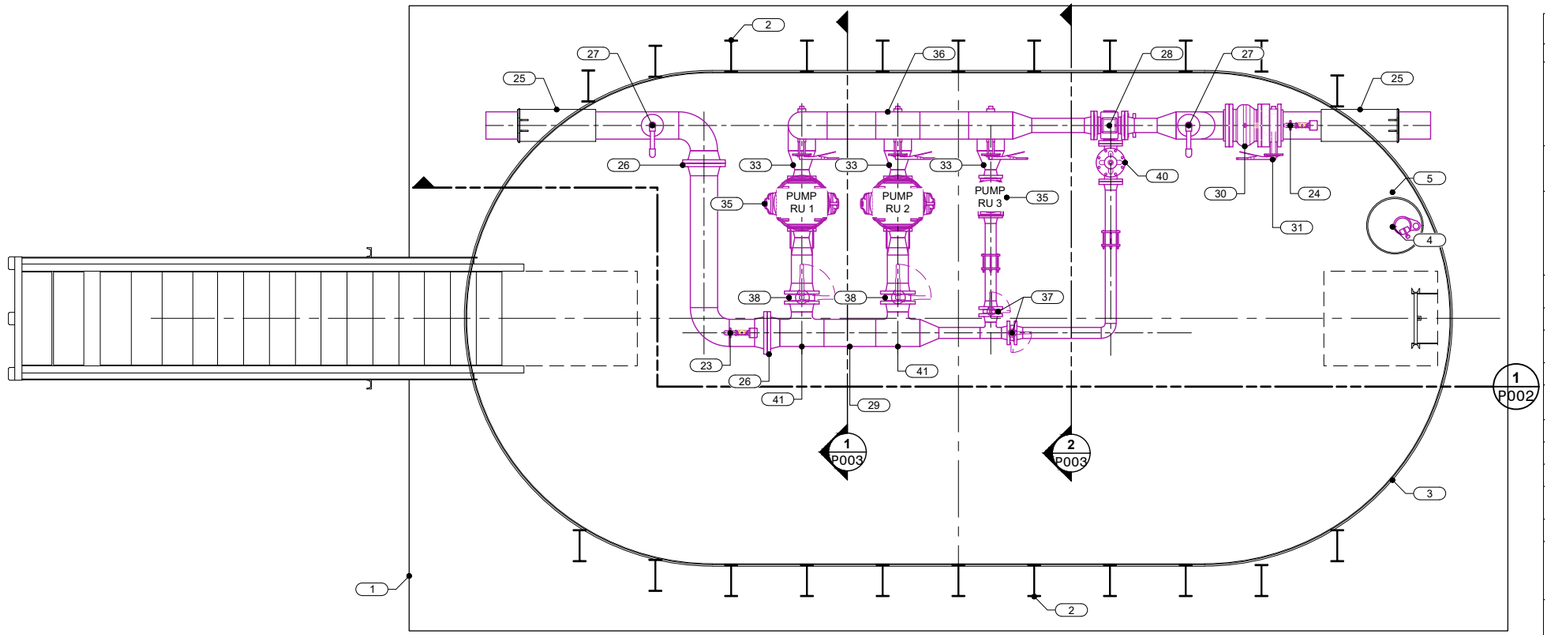
CLIENT:
CITY OF WILLISTON
WILLISTON, ND

PREPARED BY: RFM
CHECKED BY: KMJ
APPROVED BY: KMJ

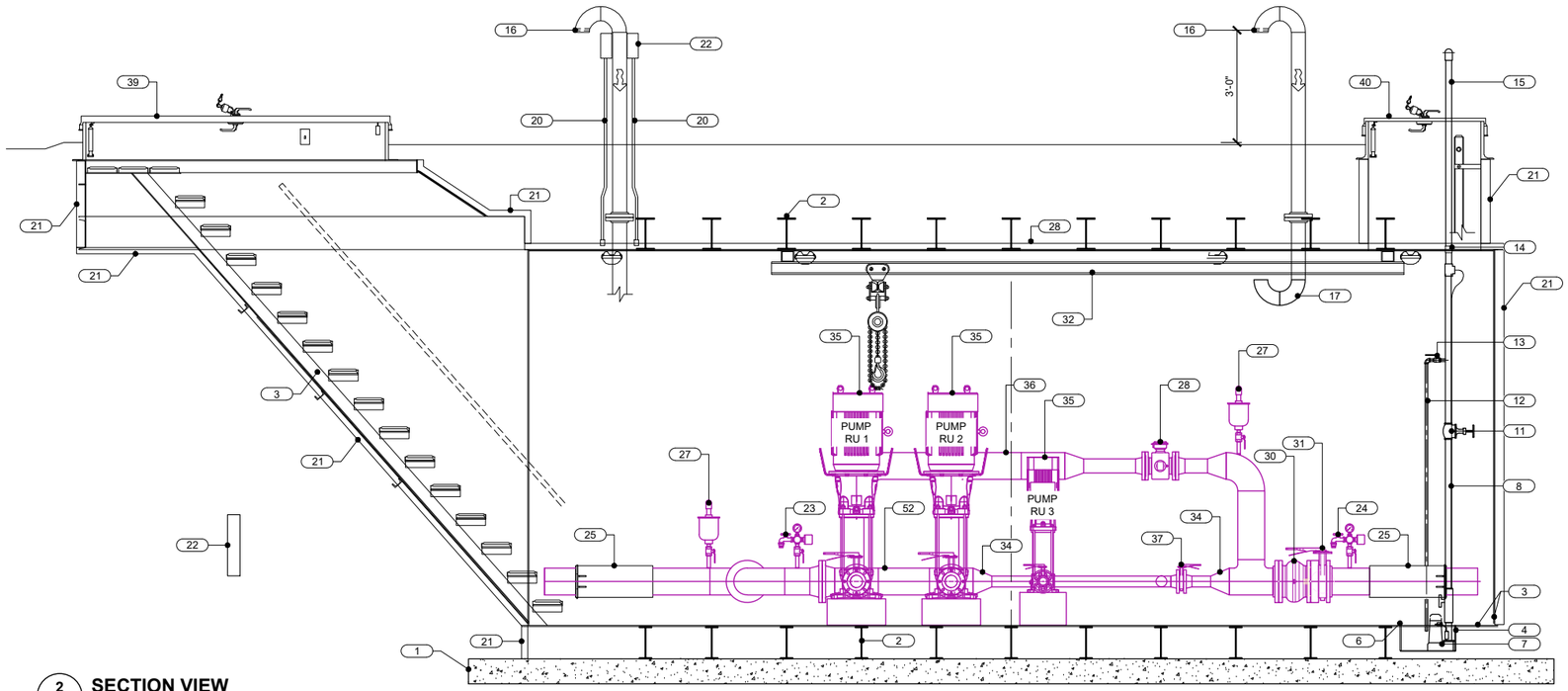
PROJECT NO: P00581-2025-003
DATE: FEBRUARY 2026
ALT. PROJECT NO:

SHEET DESIGNATOR:

SHEET NO:
P001



1 P002 **PLAN VIEW**



2 P002 **SECTION VIEW**

PIPING & EQUIPMENT SCHEDULE

MARK	DESCRIPTION
1	CONCRETE SLAB - DESIGN SHALL BE BY THE PUMP STATION PRE-FABRICATOR AND FOR THE EXISTING SOIL CONDITIONS. APPROXIMATE DIMENSIONS OF 29FT X 16.5 FT SHOWN. FINAL CONCRETE SLAB DIMENSION SHALL BE AS DETERMINED BY THE VAULT MANUFACTURER / SUPPLIER.
2	STEEL VAULT SUPPORT BEAMS - SIZE AND LOCATION SHALL BE AS DETERMINED BY THE STEEL VAULT PRE-FABRICATOR.
3	STEEL VAULT - FLOOR, WALLS, ROOF, STAIRS, PENETRATIONS, LIFT EYES, ETC. BY PRE-FABRICATOR. APPROXIMATE DIMENSIONS OF 25 FT L x 13 FT W x 10 FT H SHOWN. FINAL STEEL VAULT DIMENSIONS SHALL BE AS DETERMINED BY THE VAULT MANUFACTURER / SUPPLIER
4	SUMP - SIZE SHALL BE AS DETERMINED BY THE STEEL VAULT PRE-FABRICATOR
5	ANODE - 1 LB, BARE MAGNESIUM
6	EXOTHERMIC WELD (PRIOR TO PAINTING) No. 10 COPPER WIRE w/HMW-PE INSULATION
7	SUMP PUMP w/SCREEN
8	SUMP DISCHARGE PIPING - 1.5" GALVANIZED (INSIDE VAULT)
9	UNION - 1.5"
10	CHECK VALVE - 1.5"
11	GATE VALVE - 1.5"
12	SUMP DISCHARGE PIPING DRAIN - 1/2" COPPER PIPE TO SUMP
13	BALL VALVE - 0.5"
14	TRANSITION COUPLING - 1.5" GALV. TO SCH 80 PVC (OUTSIDE VAULT). INSTALL GALV. PIPE AND COUPLING PRIOR TO VAULT INSULATION APPLICATION.
15	SUMP DISCHARGE PIPING - 1.5" SCH 80 PVC (OUTSIDE VAULT) INSULATED, SCREEN OUTLET. COORDINATE ROUTING WITH SITE GRADING.
16	VAULT AIR INTAKE - 6" SCREENED (REMOVABLE) AIR INTAKE COATED w/SERIES 66
17	VAULT AIR INTAKE - 0.25" DRAIN COUPLING w/PLUG
18	VAULT AIR EXHAUST - 6"
19	EQUIPMENT HATCH 30"X36"
20	POWER SERVICE (VERIFY SIZE) SEE SPECIFICATIONS
21	ENTIRE EXTERIOR TOP, RISER, AND WALLS TO BE COATED w/URETHANE FOAM INSULATION TO R-19 VALUE w/WATER EMULSIVE COATING ON EXTERIOR OF FOAM
22	SACRIFICIAL ANODES, EIGHT (8) REQUIRED.
23	PUMP STATION INLET PRESSURE ASSEMBLY, SEE DETAIL: 4/D102
24	PUMP STATION OUTLET PRESSURE ASSEMBLY, SEE DETAIL: 4/D102
25	8" WALL PIPE w/RESTRAINING TAB & GUSSETS
26	WELD ON FLANGE, SIZE & STYLE VARIES
27	1" HALF-COUPLING FOR AIR RELEASE VALVE ASSEMBLY, SEE DETAIL 3/D102
28	6" E&H MAGNETIC FLOW METER w/METER MOUNTED READOUT.
29	8" BUTT WELD PUMP SUCTION HEADER PIPE w/BRANCH NOZZLES
30	8" FLANGED GLOBE CHECK VALVE
31	8" WAFER BUTTERFLY VALVE w/LEVER
32	DPI BUILDING TROLLEY AND HOIST
33	8"x4" BW CONCENTRIC REDUCER
34	8"x3" BW CONCENTRIC REDUCER
35	PUMP MULTISTAGE VERTICAL CENTRIFUGAL, MOTOR, AND BASE
36	8" BUTT WELD PUMP DISCHARGE HEADER PIPE w/BRANCH NOZZLES
37	3" WAFER BUTTERFLY VALVE w/LEVER
38	6" WAFER BUTTERFLY VALVE w/LEVER
39	ENTRY HATCH - BILCO L50 30" x 96" HATCH INSULATED, w/HOLD-OPEN ARM, AND HASP FOR PADLOCK AND STAIR SYSTEM
40	3" PRESSURE RELIEF VALVE
41	ENTRY HATCH - BILCO S50 30" x 36" HATCH INSULATED, w/HOLD-OPEN ARM, AND HASP FOR PADLOCK AND ALUMINUM LADDER W LU-1 SAFETY POST

AE2S

Certification of Individual Project Design Disciplines Are Included On Their Individual Drawings, Respectively

REGISTERED PROFESSIONAL ENGINEER
KEVIN JOHNSON
PE-4964
02-20-2026
Date
NORTH DAKOTA

STATUS: PRELIMINARY - NOT FOR CONSTRUCTION

SYM	DATE	APPR

GENERAL NOTES

1. SEE SHEET P001 FOR GENERAL PROCESS NOTES.

PROJECT TITLE:
WILLISTON WATER RESOURCE RECOVERY FACILITY (WRRF) REUSE PROJECT

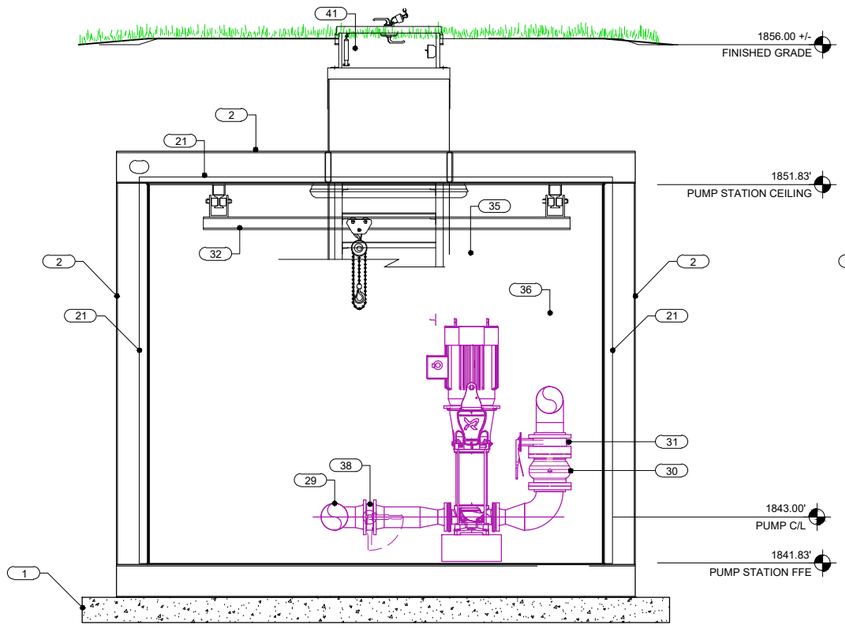
Advanced Engineering and Environmental Services, LLC www.ae2s.com

SHEET TITLE:
PLAN AND SECTION VIEW

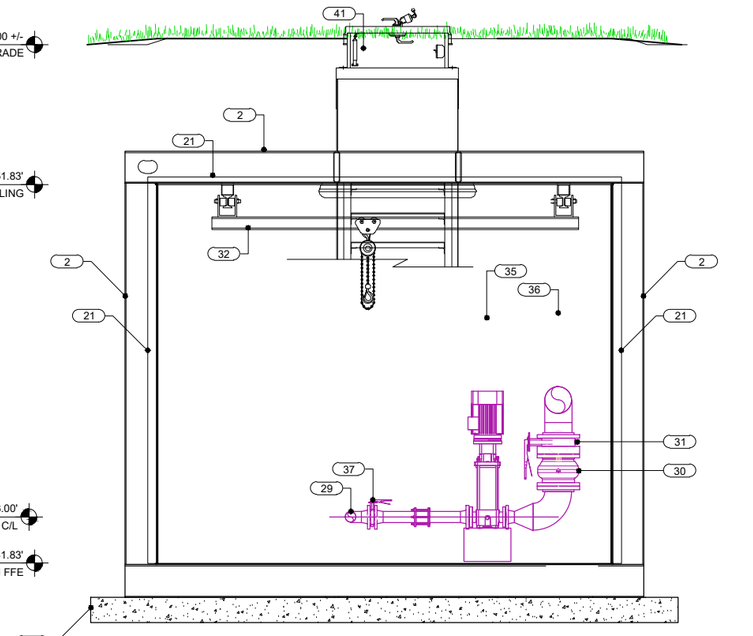
CLIENT:
CITY OF WILLISTON
WILLISTON, ND

PREPARED BY: RFM
CHECKED BY: KMJ
APPROVED BY: KMJ

PROJECT NO: P00581-2025-003
DATE: FEBRUARY 2026
ALT. PROJECT NO:
SHEET DESIGNATOR:
SHEET NO: **P002**



1 P003 **PUMP 1 AND 2 SECTION VIEW**



2 P003 **PUMP 3 SECTION VIEW**

PIPING & EQUIPMENT SCHEDULE

MARK	DESCRIPTION
1	CONCRETE SLAB - DESIGN SHALL BE BY THE PUMP STATION PRE-FABRICATOR AND FOR THE EXISTING SOIL CONDITIONS. APPROXIMATE DIMENSIONS OF 29FT X 16.5 FT SHOWN. FINAL CONCRETE SLAB DIMENSION SHALL BE AS DETERMINED BY THE VAULT MANUFACTURER / SUPPLIER.
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3	STEEL VAULT - FLOOR, WALLS, ROOF, STAIRS, PENETRATIONS, LIFT EYES, ETC. BY PRE-FABRICATOR. APPROXIMATE DIMENSIONS OF 25 FT L x 13 FT W x 10 FT H SHOWN. FINAL STEEL VAULT DIMENSIONS SHALL BE AS DETERMINED BY THE VAULT MANUFACTURER / SUPPLIER
4	SUMP - SIZE SHALL BE AS DETERMINED BY THE STEEL VAULT PRE-FABRICATOR
5	ANODE - 1 LB, BARE MAGNESIUM
6	EXOTHERMIC WELD (PRIOR TO PAINTING) No. 10 COPPER WIRE w/HMW-PE INSULATION
7	SUMP PUMP w/SCREEN
8	SUMP DISCHARGE PIPING - 1.5" GALVANIZED (INSIDE VAULT)
9	UNION - 1.5"
10	CHECK VALVE - 1.5"
11	GATE VALVE - 1.5"
12	SUMP DISCHARGE PIPING DRAIN - 1/2" COPPER PIPE TO SUMP
13	BALL VALVE - 0.5"
14	TRANSITION COUPLING - 1.5" GALV. TO SCH 80 PVC (OUTSIDE VAULT). INSTALL GALV. PIPE AND COUPLING PRIOR TO VAULT INSULATION APPLICATION.
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16	VAULT AIR INTAKE - 6" SCREENED (REMOVABLE) AIR INTAKE COATED w/SERIES 66
17	VAULT AIR INTAKE - 0.25" DRAIN COUPLING w/PLUG
18	VAULT AIR EXHAUST - 6"
19	EQUIPMENT HATCH 30"X36"
20	POWER SERVICE (VERIFY SIZE) SEE SPECIFICATIONS
21	ENTIRE EXTERIOR TOP, RISER, AND WALLS TO BE COATED w/URETHANE FOAM INSULATION TO R-19 VALUE w/WATER EMULSIVE COATING ON EXTERIOR OF FOAM
22	SACRIFICIAL ANODES, EIGHT (8) REQUIRED.
23	PUMP STATION INLET PRESSURE ASSEMBLY, SEE DETAIL: 4/D102
24	PUMP STATION OUTLET PRESSURE ASSEMBLY, SEE DETAIL: 4/D102
25	8" WALL PIPE w/RESTRAINING TAB & GUSSETS
26	WELD ON FLANGE, SIZE & STYLE VARIES
27	1" HALF-COUPLING FOR AIR RELEASE VALVE ASSEMBLY, SEE DETAIL 3/D102
28	6" E&H MAGNETIC FLOW METER w/METER MOUNTED READOUT.
29	8" BUTT WELD PUMP SUCTION HEADER PIPE w/BRANCH NOZZLES
30	8" FLANGED GLOBE CHECK VALVE
31	8" WAFER BUTTERFLY VALVE w/LEVER
32	DPI BUILDING TROLLEY AND HOIST
33	8"x4" BW CONCENTRIC REDUCER
34	8"x3" BW CONCENTRIC REDUCER
35	PUMP MULTISTAGE VERTICAL CENTRIFUGAL, MOTOR, AND BASE
36	8" BUTT WELD PUMP DISCHARGE HEADER PIPE w/BRANCH NOZZLES
37	3" WAFER BUTTERFLY VALVE w/LEVER
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40	3" PRESSURE RELIEF VALVE
41	ENTRY HATCH - BILCO S50 30" x 36" HATCH INSULATED, w/HOLD-OPEN ARM, AND HASP FOR PADLOCK AND ALUMINUM LADDER W LU-1 SAFETY POST

AE2S

Certification of Individual Project Design Disciplines Are Included On Their Individual Drawings, Respectively

REGISTERED PROFESSIONAL ENGINEER
KEVIN JOHNSON
PE-4964
02-20-2026
Date
NORTH DAKOTA

STATUS: PRELIMINARY - NOT FOR CONSTRUCTION

SYM	DATE	APPR

GENERAL NOTES

1. SEE SHEET P001 FOR GENERAL PROCESS NOTES.

PROJECT TITLE:
WILLISTON WATER RESOURCE RECOVERY FACILITY (WRRF) REUSE PROJECT

Advanced Engineering and Environmental Services, LLC www.ae2s.com

SHEET TITLE:
SECTION VIEW

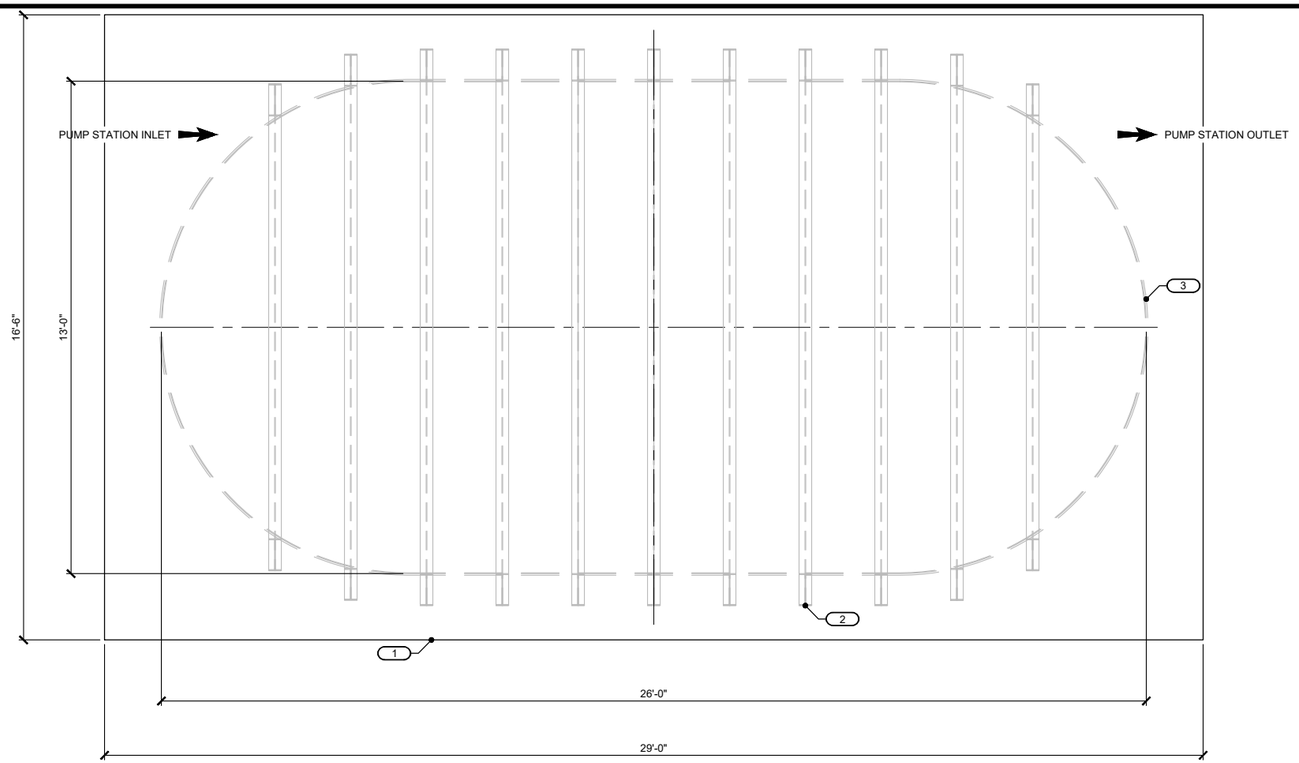
CLIENT:
CITY OF WILLISTON
WILLISTON, ND

PREPARED BY: RFM
CHECKED BY: KMJ
APPROVED BY: KMJ

PROJECT NO: P00581-2025-003
DATE: FEBRUARY 2026
ALT. PROJECT NO:

SHEET DESIGNATOR:

SHEET NO: **P003**



1 P004 **BASE SLAB - PLAN**
SCALE: NONE

PIPING & EQUIPMENT SCHEDULE

MARK	DESCRIPTION
1	CONCRETE SLAB - DESIGN SHALL BE BY THE PUMP STATION PRE-FABRICATOR AND FOR THE EXISTING SOIL CONDITIONS. APPROXIMATE DIMENSIONS OF 29FT X 16.5 FT SHOWN. FINAL CONCRETE SLAB DIMENSION SHALL BE AS DETERMINED BY THE VAULT MANUFACTURER / SUPPLIER.
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19	EQUIPMENT HATCH 30"X36"
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22	SACRIFICIAL ANODES, EIGHT (8) REQUIRED.
23	PUMP STATION INLET PRESSURE ASSEMBLY, SEE DETAIL: 4/D102
24	PUMP STATION OUTLET PRESSURE ASSEMBLY, SEE DETAIL: 4/D102
25	8" WALL PIPE w/RESTRAINING TAB & GUSSETS
26	WELD ON FLANGE, SIZE & STYLE VARIES
27	1" HALF-COUPLING FOR AIR RELEASE VALVE ASSEMBLY, SEE DETAIL 3/D102
28	6" E&H MAGNETIC FLOW METER w/METER MOUNTED READOUT.
29	8" BUTT WELD PUMP SUCTION HEADER PIPE w/BRANCH NOZZLES
30	8" FLANGED GLOBE CHECK VALVE
31	8" WAFER BUTTERFLY VALVE w/LEVER
32	DPI BUILDING TROLLEY AND HOIST
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40	3" PRESSURE RELIEF VALVE
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REGISTERED PROFESSIONAL ENGINEER
KEVIN JOHNSON
PE-4964
02-20-2026
Date
NORTH DAKOTA

STATUS: PRELIMINARY - NOT FOR CONSTRUCTION

SYM	DATE	APPR

GENERAL NOTES

1. SEE SHEET P001 FOR GENERAL PROCESS NOTES.

PROJECT TITLE:
WILLISTON WATER RESOURCE RECOVERY FACILITY (WRRF) REUSE PROJECT

Advanced Engineering and Environmental Services, LLC www.ae2s.com

SHEET TITLE:
CONCRETE SLAB

CLIENT:
CITY OF WILLISTON
WILLISTON, ND

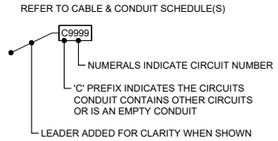
PREPARED BY: RFM
CHECKED BY: KMJ
APPROVED BY: KMJ

PROJECT NO: P00581-2025-003
DATE: FEBRUARY 2026
ALT. PROJECT NO:
SHEET DESIGNATOR:
SHEET NO: **P004**

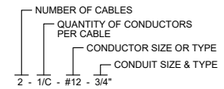
ELECTRICAL ABBREVIATIONS

A	AMPERES
AC	ABOVE COUNTER (VERIFY HEIGHT)
ACK	ACKNOWLEDGE
AE	ANALYZER ELEMENT
AI	ANALOG INPUT
AIT	ANALYZER INDICATION TRANSMITTER
A.F.F.	ABOVE FINISHED FLOOR
AM	AMMETER
ANN	ANNUNCIATOR
AO	ANALOG OUTPUT
AWG	AMERICAN WIRE GAGE
BKR	BREAKER
BLDG	BUILDING
CKT	CIRCUIT
℄	CENTER LINE
CONTR	CONTRACTOR
CP	CONTROL PANEL
CPT	CONTROL POWER TRANSFORMER
CS	CONTROL STATION
CT	CURRENT TRANSFORMER
DE	DUAL ELEMENT
DI	DIGITAL INPUT
DISC	DISCONNECT
DO	DIGITAL OUTPUT
DP	DAMP PROOF
EC	ELECTRICAL CONTRACTOR
ELEC	ELECTRICAL
EMT	ELECTRICAL METALLIC TUBING
EXP	EXPLOSION PROOF
EQUIP	EQUIPMENT
F&I	FURNISH AND INSTALL
FCV	FLOW CONTROL VALVE
FE	FLOW ELEMENT
FIT	FLOW INDICATING TRANSMITTER
FS	FLOW SWITCH
FU	FUSE OR FUSIBLE
GC	GENERAL CONTRACTOR
GDE	GAS DETECT ELEMENT
GFI	GROUND FAULT INTERRUPTER
GND	GROUND
GRS	GALVANIZED RIGID STEEL CONDUIT
HD	HEAVY DUTY
HH	HANDHOLE
H/R	HAND/REMOTE
HOA	HAND-OFF-AUTO
HOL	HAND-OFF-LOCAL
HP	HORSEPOWER
HPS	HIGH PRESSURE SODIUM
HS	HAND SWITCH
HTR	HEATER
HZ	HERTZ (CYCLES / SECOND)
IMC	INTERMEDIATE METAL CONDUIT
JB	JUNCTION BOX
KVA	KILOVOLT-AMPERES
KVAR	KILOVOLT-AMPERES REACTIVE
KW	KILOWATTS
LIT	LEVEL INDICATING TRANSMITTER
LMF	LIQUID-TIGHT METALLIC CORE FLEXIBLE CONDUIT
LSH	LEVEL SWITCH HIGH
LSHH	LEVEL SWITCH HIGH HIGH
LSL	LEVEL SWITCH LOW
LSLL	LEVEL SWITCH LOW LOW
M	MOTOR STARTER OPERATING COIL
MAX	MAXIMUM
MCM	THOUSAND CIRCULAR MILS
MCP	MOTOR CIRCUIT PROTECTOR
MECH	MECHANICAL
MFR	MANUFACTURER
MH	METAL HALIDE
MIN	MINUTE OR MINIMUM
MTD	MOUNTED
NF	NON-FUSED
NC	NORMALLY CLOSED
NO	NORMALLY OPEN
NTC	NOT CONNECTED
OL(S)	OVERLOAD RELAY CONTACT(S)
PF	POWER FACTOR
PIT	PRESSURE INDICATING TRANSMITTER
PLC	PROGRAMMABLE LOGIC CONTROLLER
PSH	PRESSURE SWITCH HIGH
PSL	PRESSURE SWITCH LOW
PTT	PUSH TO TEST
PVC	POLYVINYLCHLORIDE CONDUIT
REQ'D	REQUIRED
RS	RIGID STEEL CONDUIT
RTD	RESISTANCE TEMPERATURE DETECTOR
RTM	RUNNING TIME METER
RTR	REMOTE TEST / RESET
SCP	SUPERVISORY CONTROL PANEL
SCADA	SUPERVISORY CONTROL AND DATA ACQUISITION
SE	SERVICE ENTRANCE
SEC	SECOND OR SECONDARY
SIG	SIGNAL
SOL Vv	SOLENOID VALVE
SP	SINGLE POLE
SPECS	SPECIFICATIONS
SSNR	"SOFT START" NON-REVERSING SWITCH
SSR SW	"SOFT START" REVERSING SWITCH
SUSE	SUITABLE FOR USE AS SERVICE ENTRANCE
TD	TIME DELAY
TEMP	TEMPERATURE
TIT	TEMPERATURE INDICATING TRANSMITTER
TS	MOTOR THERMAL SWITCH
TSTAT	THERMOSTAT
UH	UNIT HEATER
V	VOLTS
VFD	VARIABLE FREQUENCY DRIVE
VM	VOLTMETER
VS	VOLTMETER SWITCH
Vv	VALVE
W	WATTS OR WIRE
W/	WITH
WW	WIREWAY
WP	WEATHERPROOF
XFMR	TRANSFORMER
ZC	POSITION CONTROLLER
ZI	POSITION INDICATOR
ZSC	POSITION SWITCH CLOSED
ZSO	POSITION SWITCH OPENED

CIRCUIT DESIGNATOR



CIRCUIT LEGEND



LINETYPE LEGEND

- NEW EQUIPMENT
- EXISTING EQUIPMENT
- FUTURE EQUIPMENT

DEMOLITION LEGEND

- ITEMS TO BE REMOVED
- ITEMS TO BE REUSED

COMMUNICATION / SECURITY / FIRE PROTECTION SYMBOLS

- ANTENNA
- I — DUCT DETECTOR REMOTE INDICATOR
- S — DUCT SMOKE DETECTOR
- S — SMOKE DETECTOR
- H — HEAT DETECTOR (R = RATE OF RISE, 135° = FIXED RATE, MP = MOISTURE AND DUST PROOF, C = COMBINATION)
- F — PULL STATION
- FIRE ALARM HORN ONLY
- S 15 — STROBE ONLY (NUMBER INDICATES CANDELA RATING)
- E — PULL STATION (CHEMICAL)
- E — CHEMICAL HORN / STROBE
- C — FIRE CHIME / STROBE
- F 15 — FIRE HORN / STROBE (NUMBER INDICATES CANDELA RATING)
- A 15 — OTHER ALARM HORN / STROBE (NUMBER INDICATES CANDELA RATING)
- D — MAGNETIC DOOR HOLDER
- V — FIRE SPRINKLER TAMPER SWITCH
- FL — FIRE SPRINKLER FLOW SWITCH
- PS — DRY SYSTEM PRESSURE SWITCH
- S E — 'E' INDICATES EXISTING DEVICE TO REMAIN
- DAC — DOOR ACCESS CONTROLLER
- DS — MAGNETIC DOOR SWITCH
- KP — SECURITY KEYPAD
- CR — CARD READER (PROXIMITY TYPE)
- ES — ELECTRIC DOOR STRIKE
- IC — INTERCOM STATION
- RE — REQUEST TO EXIT
- P — PAGING SYSTEM HORN
- P — PAGING SYSTEM SPEAKER
- VC — VOLUME CONTROL
- FACP — FIRE ALARM CONTROL PANEL
- FAAP — FIRE ALARM REMOTE ANNUNCIATOR PANEL
- ADMIN NETWORK DATA OUTLET (X) INDICATES JACK QUANTITY
- SCADA NETWORK DATA OUTLET (X) INDICATES JACK QUANTITY
- SCADA NETWORK / ADMIN NETWORK DATA OUTLET (X) - SCADA NETWORK JACK QUANTITY (X) - ADMIN NETWORK JACK QUANTITY
- SECURITY CAMERA
- WIRELESS ACCESS POINT (WAP)

ONE-LINE DIAGRAM AND SCHEMATIC SYMBOLS

- R — PRESS TO TEST LAMP (LETTER DENOTES COLOR)
- RUN / OFF / AUTO — SELECTOR SWITCH
- CIRCUIT BREAKER
- MAGNETIC TRIP
- THERMAL TRIP
- RTM — RUNNING TIME METER
- CONTACT (N.C., N.O.)
- 52 M — OPERATING COIL (LETTER OR NUMBER DENOTES DEVICE)
- 30A — FUSE (NUMBER DENOTES RATING)
- DISCONNECT SWITCH
- DE-ENERGIZED TIMER CONTROL (N.C., N.O.)
- ENERGIZED TIMER CONTROL (N.C., N.O.)
- FLOW SWITCH (N.C., N.O.)
- LIMIT SWITCH (N.C., N.O.)
- LIQUID LEVEL SWITCH (N.C., N.O.)
- PRESSURE SWITCH (N.C., N.O.)
- TEMPERATURE SWITCH (N.C., N.O.)
- TORQUE SWITCH (N.C., N.O.)
- PUSHBUTTON CONTACT (OFF, ON)
- DOUBLE CIRCUIT PUSHBUTTON SWITCH
- SURGE CAPACITOR
- POWER FACTOR CAPACITOR WITH FUSING AND INDICATING LIGHTS
- FUSED DISCONNECT SWITCH
- LINE REACTOR
- DRAW-OUT CIRCUIT BREAKER
- GROUND CONNECTION
- CHASSIS CONNECTION
- R PTT — INDICATING LIGHT (LETTER DENOTES COLOR) (PTT = PUSH TO TEST)
- CONTROL OR POTENTIAL TRANSFORMER
- THERMAL OVERLOAD TRIP UNITS
- DEVICE MOUNTED IN MOTOR CONTROL CENTER (MCC)
- DEVICE MOUNTED IN FIELD
- GROUND ROD
- LIGHTNING ARRESTOR
- VS — CONTROL OR INSTRUMENT SWITCH (LETTERS DENOTES FUNCTION)
- CURRENT TRANSFORMER
- POTENTIAL TRANSFORMER (DRAW OUT TYPE WITH PRIMARY FUSES)
- CS — CONTROL STATION
- AM — INSTRUMENT (LETTER DENOTES TYPE)
- 20 — MOTOR (NUMBER DENOTES HP)
- 20 TS — MOTOR (NUMBER DENOTES HP) (TS = THERMAL SWITCH)
- 20 SENSOR — MOTOR (NUMBER DENOTES HP) (SENSOR = SEAL FAIL)
- MOTOR CIRCUIT PROTECTOR (MCP)
- MOLDED CASE CIRCUIT BREAKER
- GENERATOR
- GROUND / NEUTRAL
- HEATER

DEVICE SYMBOLS

- E/1 E/1 — WALL MOUNTED / CEILING EXIT LIGHT (LETTER & NUMBER SIMILAR TO HID OR INCANDESCENT FIXTURE, SHADING DENOTE FACE(S) AND ARROW(S) IF REQUIRED)
- A/1 d A/1 — WALL / CEILING MOUNTED FLUORESCENT / INDUCTION / LED FIXTURE (CAPITAL LETTER DENOTES TYPE, NUMBER DENOTES CIRCUIT, SMALL LETTER DENOTES SWITCH LEG)
- A/1 d / A/1 d — WALL MOUNTED / CEILING / HUNG LINEAR FIXTURES (LETTERS & NUMBERS SIMILAR TO FIXTURES ABOVE)
- NL — HALF SOLID FIXTURE INDICATES FIXTURE IS ON AN EMERGENCY CIRCUIT (NL = UNSWITCHED LIGHTING CIRCUIT)
- GFI WP 24" — NUMBER DENOTES DUPLEX CONVENIENCE OUTLET (CIRCUIT & INCHES DENOTE MOUNTING HEIGHT IF OTHER THAN NORMAL, LETTERS SPECIFY OTHER CONDITIONS ie: WP, DP, OR GFI)
- GFCI RECEPTACLE
- ABOVE COUNTER RECEPTACLE
- FLOOR MOUNTED RECEPTACLE
- DOUBLE DUPLEX RECEPTACLE
- RTR — REMOTE TEST / RESET (RTR)
- BELOW-GRADE HANDHOLE / PULLBOX (SEE TYPICAL DETAIL)
- SPECIAL PURPOSE RECEPTACLE
- J J — JUNCTION BOX-CEILING / WALL MOUNTED
- T — MECHANICAL THERMOSTAT
- PS — PHOTO SENSOR
- 3 a — SWITCH (NO MARKING IS SINGLE POLE, 2 IS DOUBLE POLE, 3 IS 3-WAY, 4 IS 4-WAY)
- ELECTRICAL CONNECTION (NON DRAFTED / MODELED ELEMENT)
- MOTOR
- CIRCUITRY (EXPOSED, SURFACE MOUNTED)
- CIRCUITRY (BELOW GRADE OR FLOOR)
- CIRCUITRY (CONCEALED IN STRUCTURE)
- GROUND
- H — PUSHBUTTON CONTROL STATION
- DISCONNECT SWITCH
- ACROSS THE LINE STARTER
- C — LIGHTING CONTACTOR (SEE RESPECTIVE PLAN NOTE)
- PAD MOUNT FEEDPOINT (SEE TYPICAL DETAIL)

GENERAL NOTES

1. AE2S ELECTRICAL DRAWINGS ARE INTENDED TO BE REPRODUCED IN COLOR. AE2S ASSUMES NO LIABILITY FOR CONTRACTORS CHOOSING TO REPRODUCE THESE DRAWINGS IN BLACK AND WHITE OR AT A SCALE WHICH REDUCES LEGIBILITY.
2. PLANT MUST REMAIN IN VIRTUALLY CONTINUOUS OPERATION DURING CONSTRUCTION. COORDINATE SEQUENCING, SWITCHOVERS, AND SHORT DOWNTIME PERIODS WITH LOCAL UTILITY COMPANY, THE OWNER, AND THE ENGINEER DURING CONSTRUCTION.
3. COORDINATE THE INSTALLATION OF ALL BELOW-GRADE AND CAST-IN-PLACE CIRCUITRY WITH OTHER TRADES.
4. CONTRACTOR SHALL RETURN ALL DISTURBED SURFACES AND SOILS TO ORIGINAL OR PRE-CONSTRUCTION CONDITION UNLESS SPECIFICALLY INDICATED OTHERWISE.
5. CONTRACTOR SHALL LOCATE OR SHALL HAVE THE SERVING UTILITIES LOCATE ALL UNDERGROUND CABLE, CONDUITS, PIPING, UTILITIES, ETC., PRIOR TO COMMENCING CONSTRUCTION (UNDERGROUND EXCAVATION). CONTRACTOR SHALL BE RESPONSIBLE FOR THE REPAIR OF ANY DAMAGES DUE TO CONSTRUCTION ACTIVITIES.
6. EXISTING AND / OR NEW UNDERGROUND CONDUITS, DUCTBANK, AND OTHER CIRCUITRY SHOWN ON THE PLANS ARE INTENDED TO BE DIAGRAMMATIC IN NATURE. CONTRACTOR IS RESPONSIBLE FOR FIELD CONFIRMING ALL CIRCUITRY AND ROUTING.
7. SCHEDULE 80 PVC CONDUIT IS ALLOWED UNDERGROUND FOR NON-VFD AND NON-SIGNAL CIRCUITS. TRANSITION TO RIGID STEEL CONDUIT BEFORE EXPOSING ABOVE GRADE.
8. FIELD CONFIRM CONDUIT ROUTING. DO NOT ROUTE CONDUIT ON BUILDING EXTERIOR UNLESS NOTED OTHERWISE.
9. SEE ARCHITECTURAL, STRUCTURAL, MECHANICAL, AND PROCESS DRAWINGS FOR EXACT EQUIPMENT, PIPING, AND BUILDING LAYOUTS.
10. ALL CONDUCTORS ARE TO BE COPPER.
11. PROVIDE AS-BUILT DRAWINGS. DRAWINGS SHALL BE NEAT AND LEGIBLE.
12. COORDINATE ELECTRICAL WORK WITH OTHER TRADES.
13. PROVIDE PANEL SCHEDULES FOR ALL NEW AND / OR MODIFIED PANELS. SCHEDULES SHALL BE TYPED.
14. VERIFY LOCATION OF ALL FLOOR OUTLETS WITH ARCHITECT PRIOR TO ROUGH-IN.
15. WHERE OTHER ELECTRICAL DEVICES ARE LOCATED ADJACENT TO LIGHT SWITCHES, MOUNT ALL DEVICES AT THE SAME CENTER LINE ELEVATION. WHERE ELECTRICAL DEVICES ARE NOT LOCATED ADJACENT TO LIGHT SWITCHES, MOUNT DEVICES AT 48" A.F.F. UNLESS NOTED OTHERWISE.
16. DO NOT SCALE DRAWINGS. VERIFY DIMENSIONS IN FIELD PRIOR TO COMMENCEMENT OF WORK.
17. FINAL CONNECTIONS TO EQUIPMENT SHALL BE PER MANUFACTURER'S APPROVED WIRING DIAGRAMS, DETAILS, AND INSTRUCTIONS. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE MATERIALS AND EQUIPMENT COMPATIBLE WITH EQUIPMENT ACTUALLY SUPPLIED.
18. ALL EMPTY RACEWAY SYSTEMS SHALL HAVE A PULLWIRE OR EQUAL AND SHALL BE IDENTIFIED AT ALL JUNCTION, PULL, AND TERMINATION POINTS USING PERMANENT METALLIC TAGS. TAG SHALL INDICATE INTENDED USE OF CONDUIT, ORIGINATION, AND TERMINATION POINTS OF EACH INDIVIDUAL CONDUIT.
19. IT IS THE INTENT OF THESE DRAWINGS AND SPECIFICATIONS TO ESTABLISH A STANDARD OF QUALITY. THE ENGINEER RESERVES THE RIGHT TO APPROVE METHODS AND MATERIALS NOT REFLECTED HEREIN.
20. CONTRACTOR SHALL VISIT SITE PRIOR TO BID AND VERIFY THAT CONDITIONS ARE AS INDICATED. CONTRACTOR SHALL INCLUDE IN THEIR BID THE COSTS REQUIRED TO MAKE WORK MEET EXISTING CONDITIONS.
21. WORK SHALL BE PERFORMED IN A WORKMANLIKE MANNER TO THE SATISFACTION OF THE ARCHITECT / ENGINEER.
22. WORK, MATERIALS, AND EQUIPMENT SHALL CONFORM TO THE LATEST EDITIONS OF LOCAL, STATE, AND NATIONAL CODES AND ORDINANCES.
23. VERIFY THAT EXACT LOCATION OF EQUIPMENT TO BE FURNISHED BY OTHERS PRIOR TO ROUGH-IN.
24. SYSTEMS SHALL BE TESTED FOR PROPER OPERATION. IF TESTS SHOW THAT WORK IS DEFECTIVE, CONTRACTOR SHALL MAKE CORRECTIONS NECESSARY AT NO COST TO OWNER.
25. SYSTEMS SHALL BE COMPLETE, OPERABLE, AND READY FOR CONTINUOUS OPERATION. LIGHTS, SWITCHES, RECEPTACLES, MOTORS, ETC., SHALL BE CONNECTED AND OPERABLE.
26. ALL CONDUIT IS TO BE RIGID STEEL WITH CAST 'FS' STYLE BOXES. MAKE FINAL EQUIPMENT CONNECTIONS USING LIQUID-TIGHT METALLIC FLEX.
27. ALL LIGHTING AND RECEPTACLE CIRCUITRY CONDUCTOR QUANTITY AND CONDUIT IS THE RESPONSIBILITY OF THE CONTRACTOR. LIGHTING CIRCUITRY IS TO BE A MINIMUM OF #12AWG COPPER IN 3/4" CONDUIT, QUANTITY AS REQUIRED.
28. ALL CABLE CONNECTIONS SHALL BE TORQUED ACCORDING TO MANUFACTURER REQUIREMENTS, UL STANDARD 486A-B, AND NEC ANNEX I AS APPLICABLE. ADDITIONALLY, CONTRACTOR SHALL MARK EACH PROPERLY TORQUED BOLT / LOCKWASHER / NUT ASSEMBLY WITH A PERMANENT PAINT STRIPE OVER BOTH THE BOLT / LOCKWASHER / NUT ASSEMBLY AND THE LUG ASSEMBLY TO INDICATE ANY CHANGES IN THE POSITION OVER TIME.

AE2S
Certification of Individual Project Design Disciplines Are Included On Their Individual Drawings, Respectively

REGISTERED PROFESSIONAL ENGINEER
ADAM WAHLER
PE-7886
02-20-2026
Date
NORTH DAKOTA

STATUS: FINAL

SYM	DATE	APPR

PROJECT TITLE:
WILLISTON WATER RESOURCE RECOVERY FACILITY (WRRF) REUSE PROJECT
Advanced Engineering and Environmental Services, LLC www.ae2s.com

SHEET TITLE:
ELECTRICAL SYMBOLS AND ABBREVIATIONS

CLIENT: CITY OF WILLISTON, WILLISTON, ND

PREPARED BY: IPS
CHECKED BY: MAW
APPROVED BY: AMW

PROJECT NO: P00581-2025-003
DATE: FEBRUARY 2026
ALT. PROJECT NO:
SHEET DESIGNATOR:
SHEET NO: E001

1 / E101 **PUMP STATION ELECTRICAL SITE PLAN**

20' 0 20' 40'

NORTH

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REGISTERED PROFESSIONAL ENGINEER
ADAM WAHLER
PE-7886
02-20-2026
Date
NORTH DAKOTA

STATUS: FINAL

SYM	DATE	APPR

CONSTRUCTION NOTES

1. UTILITY SERVICE EQUIPMENT. SEE SPECIFICATION 16310 FOR ADDITIONAL DETAILS.
2. UTILITY TRANSFORMER PAD PROVIDED BY ELECTRICAL CONTRACTOR AND INSTALLED TO MEET SERVING ELECTRIC UTILITY REQUIREMENTS. SEE STANDARD DETAILS FOR ADDITIONAL INFORMATION.

PROJECT TITLE:
WILLISTON WATER RESOURCE RECOVERY FACILITY (WRRF) REUSE PROJECT

Advanced Engineering and Environmental Services, LLC www.ae2s.com

SHEET TITLE:
PUMP STATION ELECTRICAL SITE PLAN

CLIENT:
CITY OF WILLISTON
WILLISTON, ND

PREPARED BY: IPS
CHECKED BY: MAW
APPROVED BY: AMW

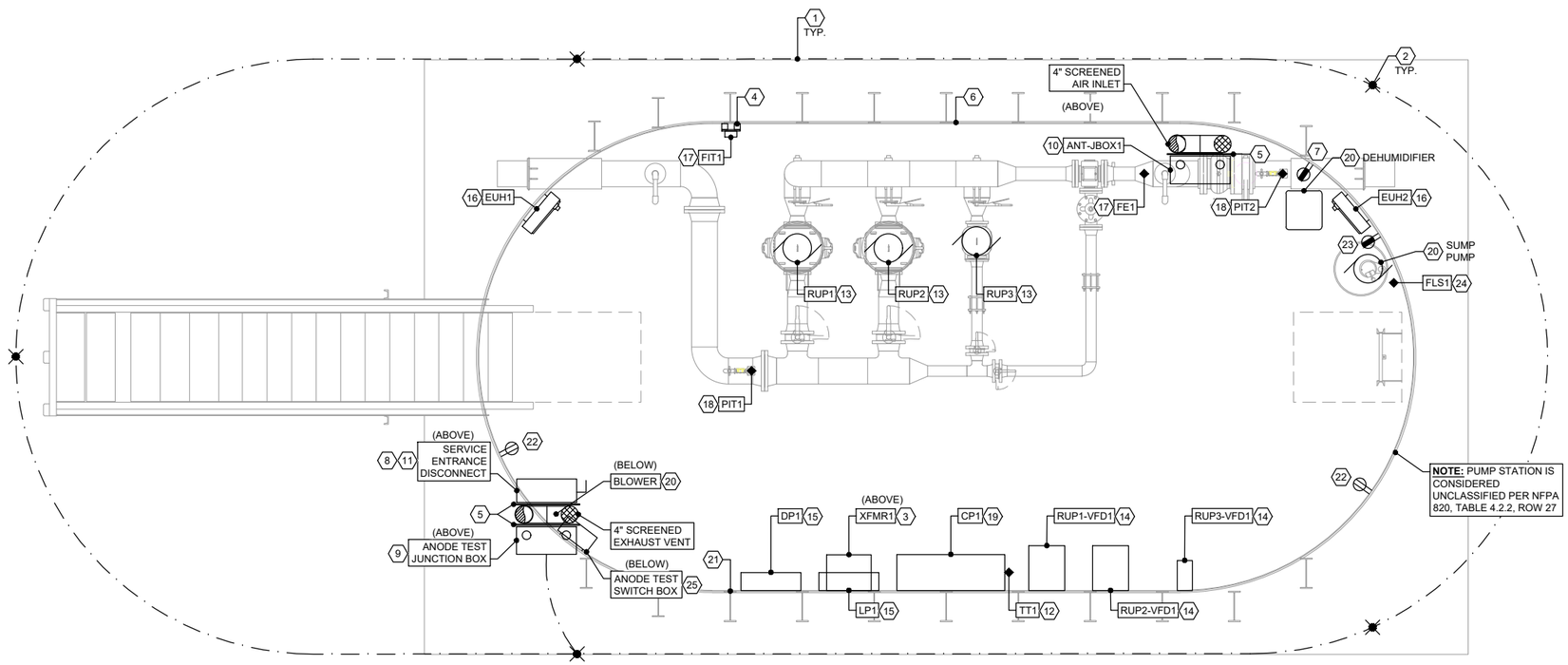
PROJECT NO: P00581-2025-003
DATE: FEBRUARY 2026
ALT. PROJECT NO:
SHEET DESIGNATOR:
SHEET NO: **E101**

GENERAL NOTES

1. ALL TAGS TO BE PRECEDED WITH "RPS-" UNLESS OTHERWISE DENOTED BY AN ASTERISK "*".
2. ALL EQUIPMENT AND INSTRUMENTATION WITHIN VAULT SHOWN IS TO BE INSTALLED BY PREFABRICATED PUMP STATION MANUFACTURER PRIOR TO DELIVERY PER THE SPECIFICATIONS INDICATED UNLESS OTHERWISE NOTED.
3. ALL WALL MOUNTED EQUIPMENT TO BE MOUNTED ON 5/8" STAINLESS STEEL STRUT TO PREVENT CONDENSATION BUILDUP BEHIND DEVICES.
4. ALL GENERAL BUILDING AND PROCESS MOUNTED INSTRUMENTATION, CONTROL PANELS, VFD'S, AND ASSOCIATED APPURTENANCES TO BE FURNISHED BY SYSTEMS INTEGRATOR AND INSTALLED BY PREFABRICATED PUMP STATION MANUFACTURER PRIOR TO DELIVERY UNLESS OTHERWISE NOTED. SEE BID FORM FOR ADDITIONAL INFORMATION.

CONSTRUCTION NOTES

1. #3/0 BARE STRANDED COPPER GROUND CONDUCTOR BURIED AT 3'-0" BELOW GRADE.
2. 5/8"X10' COPPER CLAD STEEL GROUND ROD WITH TOP MOUNTED AT MINIMUM OF 18" BELOW GRADE. LISTED IRREVERSIBLE COMPRESSION CONNECTION WITH ADEQUATE SLACK TO ACCOMMODATE FOR FROST FROST MOVEMENT OR BACKFILLING. GROUND CONDUCTOR.
3. TRANSFORMER PROVIDED BY PREFABRICATED PUMP STATION MANUFACTURER. MOUNT ABOVE PANELBOARD AS INDICATED.
4. WALL MOUNTED EQUIPMENT PANEL PROVIDED BY PREFABRICATED PUMP STATION MANUFACTURER TO MOUNT EQUIPMENT SHOWN. REFER TO THE "WALL MOUNTED EQUIPMENT DETAIL" FOR ADDITIONAL INFORMATION.
5. HOT DIPPED GALVANIZED STEEL MOUNTING PLATE FOR ELECTRICAL EQUIPMENT (1/4" THICK STEEL PLATE, MINIMUM) WELDED TO 4" SCREENED AIR VENTILATION PIPE. COORDINATE REQUIRED SIZE OF EACH PLATE FOR SCHEDULED ELECTRICAL EQUIPMENT. WELD PLATES TO AIR VENTILATION PIPES AND WELD IN STEEL BRACING AS REQUIRED FOR ADDITIONAL SUPPORT. COORDINATE SPACE ON EACH MOUNTING PLATE FOR REQUIRED ELECTRICAL EQUIPMENT AS INDICATED.
6. PREFABRICATED UNDERGROUND PUMP STATION. REFERENCE "P" SERIES SHEETS AND ELECTRICAL POWER SCHEMATICS FOR ADDITIONAL DETAILS.
7. (1) DEDICATED 20A GFCI DUPLEX RECEPTACLE PROVIDED BY PREFABRICATED BOOSTER STATION MANUFACTURER. FOR DEHUMIDIFIER POWER AT 42" A.F.F.
8. 600V, 400A, 3Ø, NEMA 3R HEAVY DUTY SERVICE ENTRANCE RATED DISCONNECT PROVIDED BY PREFABRICATED PUMP STATION MANUFACTURER. ON AIR INTAKE VENT TUBE AS SHOWN.
9. ANODE JUNCTION BOX PROVIDED BY PREFABRICATED PUMP STATION MANUFACTURER. SEE STANDARD DETAILS FOR ADDITIONAL INFORMATION.
10. TELEMETRY INTERFACE JUNCTION BOX PROVIDED BY PREFABRICATED PUMP STATION MANUFACTURER. SEE STANDARD DETAILS FOR ADDITIONAL INFORMATION.
11. ELECTRICAL CONTRACTOR TO INSTALL 3" SCH. 80 PVC CONDUIT FROM FROM UTILITY METER SOCKET TO SERVICE ENTRANCE RATED DISCONNECT. TRANSITION FROM SCH. 80 PVC CONDUIT BELOW GRADE TO RMC ABOVE GRADE UTILIZING A PVC COATED RMC SWEEP. FIELD CONFIRM EXACT ROUTING AND DISTANCES.
12. TEMPERATURE TRANSMITTER PROVIDED AND MOUNTED TO CONTROL PANEL EXTERITOR BY SYSTEMS INTEGRATOR. SHOWN ON PLANS FOR CLARITY.
13. PROCESS MOTORS PROVIDED BY PREFABRICATED PUMP STATION MANUFACTURER.
14. VARIABLE FREQUENCY DRIVE FURNISHED BY SYSTEMS INTEGRATOR AND INSTALLED WITHIN VAULT BY PREFABRICATED PUMP STATION MANUFACTURER. PUMP STATION MFR TO ENSURE REQUIRED WORKING CLEARANCE PER NEC. SEE ONE-LINES FOR ADDITIONAL INFORMATION.
15. PANELBOARDS PROVIDED BY PREFABRICATED PUMP STATION MANUFACTURER. MANUFACTURER TO INSURE REQUIRED WORKING CLEARANCES PER NEC.
16. 3KW ELECTRIC UNIT HEATER PROVIDED BY PREFABRICATED PUMP STATION MANUFACTURER AS SHOWN.
17. FLOW METER(S) AND FLOW METER TRANSMITTER(S) PROVIDED BY SYSTEMS INTEGRATOR AND INSTALLED BY PREFABRICATED PUMP STATION MANUFACTURER. SEE CABLE AND CONDUIT SCHEDULE FOR ADDITIONAL INFORMATION.
18. PRESSURE TRANSMITTER FURNISHED BY THE SYSTEMS INTEGRATOR AND INSTALLED BY PREFABRICATED PUMP STATION MANUFACTURER. INSTALL ON INSTRUMENT TAP PROVIDED BY PREFABRICATED PUMP STATION MANUFACTURER. COORDINATE MOUNTING LOCATION DURING CONSTRUCTION. SEE STANDARD MOUNTING DETAIL IN 'E' SHEETS AND CABLE AND CONDUIT SCHEDULE FOR ADDITIONAL INFORMATION.
19. CONTROL PANEL FURNISHED BY SYSTEMS INTEGRATOR AND TURNED OVER TO PREFABRICATED PUMP STATION MANUFACTURER FOR INSTALLATION WITHIN VAULT PRIOR TO DELIVERY. VAULT MANUFACTURER TO INSURE REQUIRED WORKING CLEARANCES PER NEC.
20. EQUIPMENT SHOWN PROVIDED BY PREFABRICATED PUMP STATION MANUFACTURER. PROVIDE LOCALLY MOUNTED DESIGNATED RECEPTACLE FOR USE WITH EQUIPMENT. SEE ONE-LINE DIAGRAM FOR ADDITIONAL INFORMATION.
21. METALLIC SIDE WALL OF STRUCTURE SHALL INCLUDE LISTED BURNDY GROUNDING SERVIT POST WELDED IN A READILY ACCESSIBLE LOCATION NOT EXPOSED TO PHYSICAL DAMAGE-ADJACENT TO ELECTRICAL SERVICE PANEL. METALLIC STRUCTURE SHALL BE BONDED TO SERVICE EQUIPMENT GROUNDING CONDUCTOR (EGC) BUS WITH #2 AWG BONDING JUMPER.
22. (2) 20A GFCI DUPLEX RECEPTACLES FURNISHED AND INSTALLED BY PREFABRICATED PUMP STATION MANUFACTURER IN LOCATIONS SHOWN 42" A.F.F.
23. (1) DEDICATED 20A GFCI DUPLEX RECEPTACLE FURNISHED AND INSTALLED BY PREFABRICATED PUMP STATION MANUFACTURER FOR SUMP PUMP POWER AT 24" A.F.F.
24. FLOOD SWITCH FURNISHED BY THE SYSTEMS INTEGRATOR AND INSTALLED BY PREFABRICATED PUMP STATION MANUFACTURER 3" A.F.F. FLOOD SWITCH SHALL HAVE MANUFACTURER CABLE TERMINATED TO LOCAL JUNCTION BOX PRIOR TO TRANSITIONING TO BUILDING WIRE. COORDINATE MOUNTING HEIGHT AND LOCATION DURING CONSTRUCTION.
25. ANODE TEST SWITCH BOX PROVIDED BY PREFABRICATED PUMP STATION MANUFACTURER. SEE SPECIFICATION (02608) FOR ADDITIONAL INFORMATION.



1 / E102 **PUMP STATION ELECTRICAL FLOOR PLAN**

12" 0 1' 2' 3' 4' 5'

NORTH

Plotted By: Ian Smith Date: Monday, February 23, 2026

AE2S

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REGISTERED PROFESSIONAL ENGINEER
ADAM WAHLER
PE-7886
02-20-2026
Date
NORTH DAKOTA

STATUS: FINAL

SYM	DATE	APPR

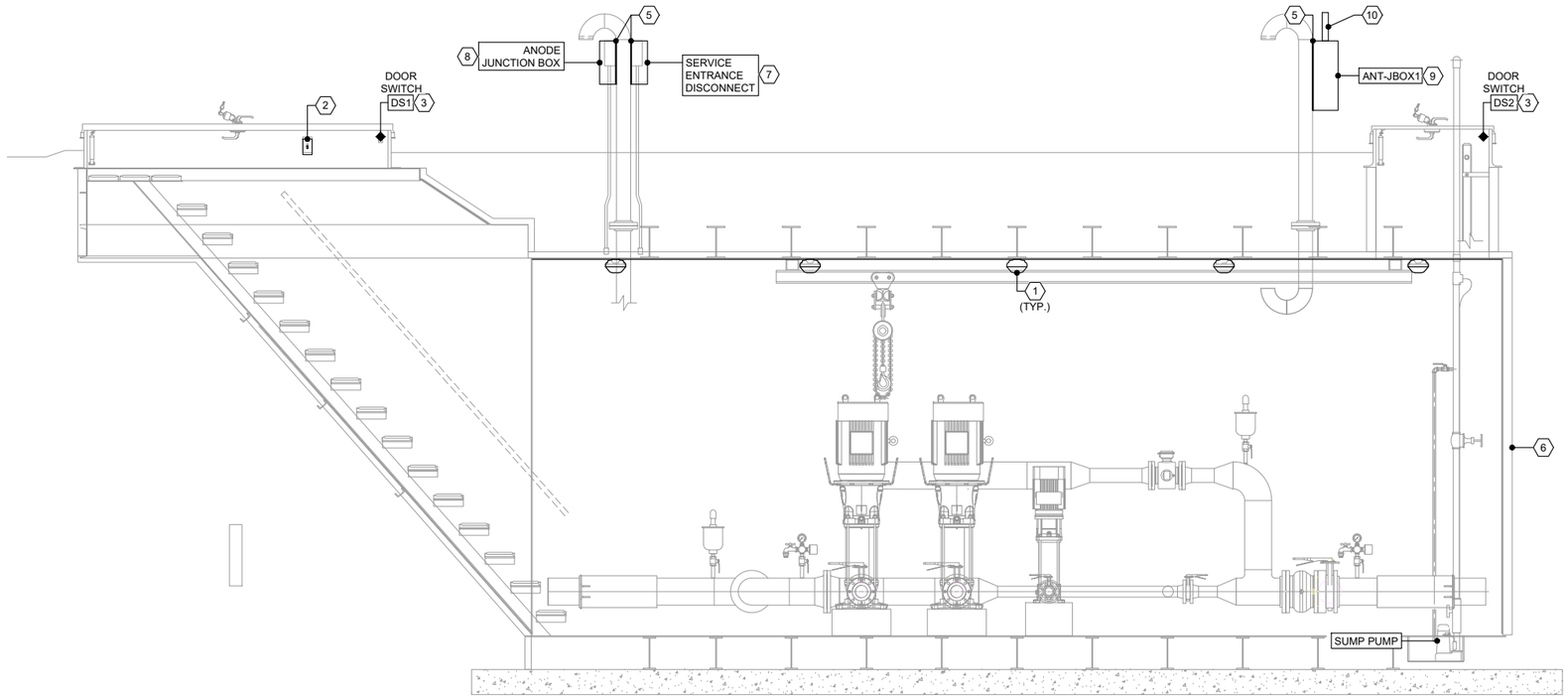
PROJECT TITLE:
WILLISTON WATER RESOURCE RECOVERY FACILITY (WRRF) REUSE PROJECT
Advanced Engineering and Environmental Services, LLC www.ae2s.com

SHEET TITLE:
PUMP STATION ELECTRICAL FLOOR PLAN

CLIENT:
CITY OF WILLISTON
WILLISTON, ND

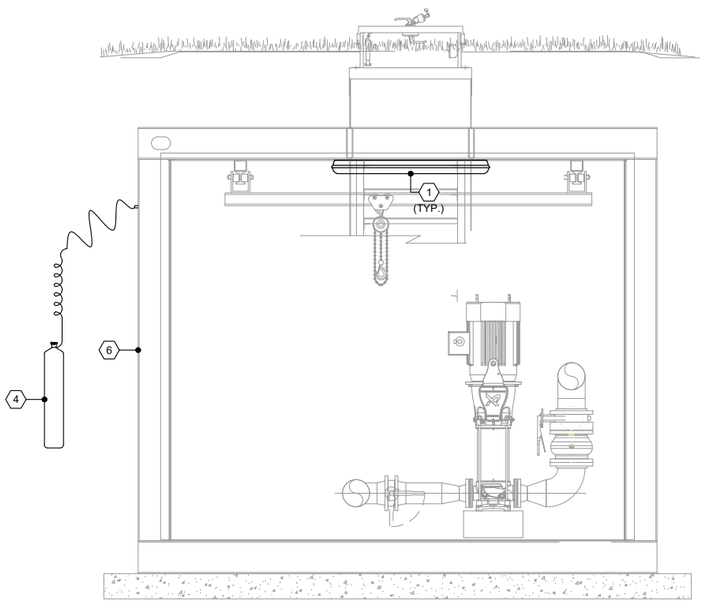
PREPARED BY: IPS
CHECKED BY: MAW
APPROVED BY: AMW

PROJECT NO: P00581-2025-003
DATE: FEBRUARY 2026
ALT. PROJECT NO:
SHEET DESIGNATOR:
SHEET NO: **E102**



1 E103 PUMP STATION ELECTRICAL PROCESS SECTION

12" 0 1' 2' 3' 4' 5'



2 E103 PUMP STATION ELECTRICAL PROCESS SECTION

12" 0 1' 2' 3' 4' 5'

AE2S

Certification of Individual Project Design Disciplines Are Included On Their Individual Drawings, Respectively

REGISTERED PROFESSIONAL ENGINEER
ADAM WAHLER
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NORTH DAKOTA

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GENERAL NOTES

1. ALL TAGS TO BE PRECEDED WITH "RPS-" UNLESS OTHERWISE DENOTED BY AN ASTERISK "*".
2. ALL EQUIPMENT AND INSTRUMENTATION WITHIN VAULT SHOWN IS TO BE INSTALLED BY PREFABRICATED PUMP STATION MANUFACTURER PRIOR PER THE SPECIFICATIONS INDICATED UNLESS OTHERWISE NOTED.
3. ALL WALL MOUNTED EQUIPMENT TO BE MOUNTED ON 5/8" STAINLESS STEEL STRUT TO PREVENT CONDENSATION BUILDUP BEHIND DEVICES.

CONSTRUCTION NOTES

1. LIGHTS PROVIDED BY PREFABRICATED VAULT MANUFACTURER. FIXTURES EQUAL TO RAB SHARK2-25NW/D10. FIXTURES SHALL HAVE STAINLESS STEEL LATCHES
2. PUMP STATION LIGHT SWITCH PROVIDED BY PREFABRICATED VAULT MANUFACTURER IN LOCATION SHOWN.
3. ACCESS HATCH INTRUSION SWITCH. SEE IO SCHEDULE AND SPECIFICATIONS FOR ADDITIONAL INFORMATION.
4. CATHODIC PROTECTION SYSTEM PROVIDED BY PREFABRICATED VAULT MANUFACTURER. CATHODE LEADS TO BE EXTENDED TO ANODE JUNCTION BOX MOUNTED ON AIR VENT AS SHOWN ON STANDARD DETAILS. SEE SPECIFICATIONS FOR ADDITIONAL INFORMATION.
5. HOT DIPPED GALVANIZED STEEL MOUNTING PLATE FOR ELECTRICAL EQUIPMENT (1/4" THICK STEEL PLATE, MINIMUM) WELDED TO 4" SCREENED AIR VENTILATION PIPE. COORDINATE REQUIRED SIZE OF EACH PLATE FOR SCHEDULED ELECTRICAL EQUIPMENT. WELD PLATES TO AIR VENTILATION PIPES AND WELD IN STEEL BRACING AS REQUIRED FOR ADDITIONAL SUPPORT. COORDINATE SPACE ON EACH MOUNTING PLATE FOR REQUIRED ELECTRICAL EQUIPMENT AS INDICATED.
6. PREFABRICATED UNDERGROUND PUMP STATION. REFERENCE "P" SERIES SHEETS AND ELECTRICAL POWER SCHEMATICS FOR ADDITIONAL DETAILS.
7. 600V, 400A, 3Ø, NEMA 3R HEAVY DUTY SERVICE ENTRANCE RATED DISCONNECT PROVIDED BY PREFABRICATED PUMP STATION MANUFACTURER ON AIR INTAKE VENT TUBE AS SHOWN.
8. ANODE JUNCTION BOX PROVIDED BY PREFABRICATED PUMP STATION. SEE STANDARD DETAILS FOR ADDITIONAL INFORMATION.
9. TELEMETRY INTERFACE JUNCTION BOX PROVIDED BY PREFABRICATED PUMP STATION MANUFACTURER. SEE STANDARD DETAILS FOR ADDITIONAL INFORMATION.
10. CELLULAR ANTENNA FURNISHED BY SYSTEMS INTEGRATOR AND TURNED OVER TO ENGINEER FOR INSTALLATION. SEE SPECIFICATION (16921) FOR ADDITIONAL INFORMATION.

PROJECT TITLE:
WILLISTON WATER RESOURCE RECOVERY FACILITY (WRRF) REUSE PROJECT

Advanced Engineering and Environmental Services, LLC www.ae2s.com

SHEET TITLE:
PUMP STATION ELECTRICAL SECTION

CLIENT:
CITY OF WILLISTON
WILLISTON, ND

PREPARED BY: IPS
CHECKED BY: MAW
APPROVED BY: AMW

PROJECT NO: P00581-2025-003
DATE: FEBRUARY 2026
ALT. PROJECT NO:
SHEET DESIGNATOR:
SHEET NO: **E103**

PANEL SCHEDULE

PANEL: RPS-LP1 LOCATION: REUSE VOLTS: 240 / 120 PHASE: 1 W: 3

AMP MAIN BKR: 80A AIC RATING: 22,000 MOUNT: SURFACE FED FROM: RPS-DP1

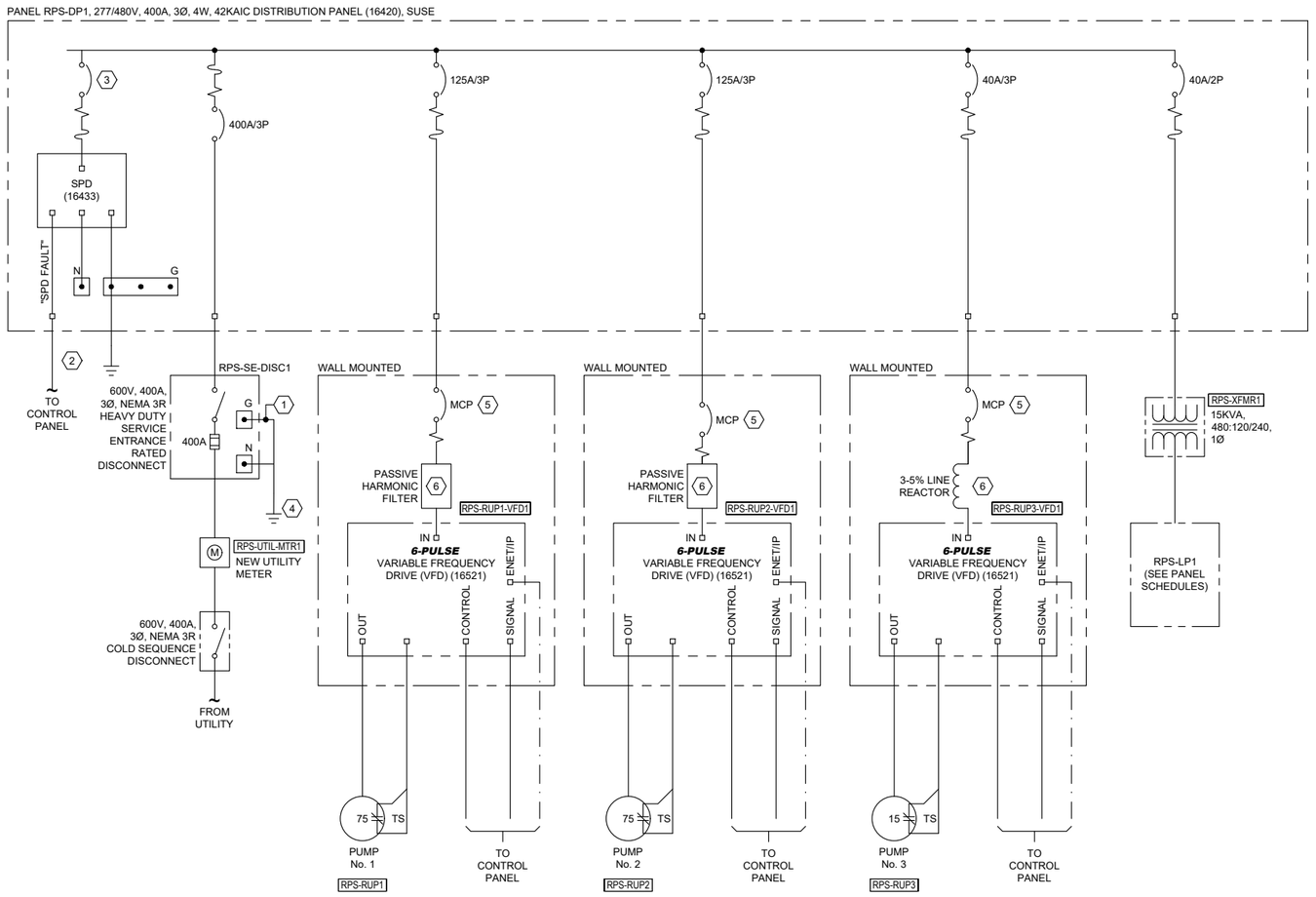
CIRCUIT DESCRIPTION	LOAD VA	CKT. BKR.	P	CKT. No.	PH.	CKT. No.	P	CKT. BKR.	LOAD VA	CIRCUIT DESCRIPTION
ELECTRIC UNIT HEATER (RPS-EUH1)	1500	20	2	1	A	2	2	20	1500	ELECTRIC UNIT HEATER (RPS-EUH2)
	1500			3	B	4			1500	
AREA LIGHTS	500	20	1	5	A	6	1	20	500	SCADA CONTROL PANEL (RPS-CP1)
RECEPTACLE: GENERAL USE	360	20	1	7	B	8	1	20	500	SCADA CONTROL PANEL (RPS-CP1)
SPARE		20	1	9	A	10	1	20	1500	RECEPTACLE: DEHUMDIFIER
RECEPTACLE: EXHAUST FANS	100	20	1	11	B	12	1	20	1500	RECEPTACLE: SUMP PUMP
SPARE		20	1	13	A	14	1	20		SPARE
SPARE		20	1	15	B	16	1	20	250	LIGHTING
SPARE		20	1	17	A	18	1	20	360	CONVENIENCE RECEPTACLE (OUTSIDE)
			1	19	B	20	1			
			1	21	A	22	1			
			1	23	B	24	1			
			1	25	A	26	1			
			1	27	B	28	1			
			1	29	A	30	1			
			1	31	B	32	1			

CONNECTED TOTALS:

KVA	11.57	
AMPS	48.21	
Phase A	48.8	Amps
Phase B	47.6	Amps

NOTES:
- ALL CIRCUIT BREAKERS SHALL BE LOCKABLE IN THE OFF POSITION
- PROVIDE SPD AS SPECIFIED IN SECTION 16433

2 E601 PUMP STATION PANEL SCHEDULE
RPS-LP1



1 E601 PUMP STATION ONE-LINE DIAGRAM

Certification of Individual Project Design Disciplines Are Included On Their Individual Drawings, Respectively

REGISTERED PROFESSIONAL ENGINEER
ADAM WAHLER
PE-7886
02-20-2026
Date
NORTH DAKOTA

STATUS: FINAL

SYM	DATE	APPR

CONSTRUCTION NOTES

1. INSTALL A MAIN BONDING JUMPER AS REQUIRED PER THE NEC.
2. ENSURE GROUND CONNECTION TO VAULT MOUNTED CERVIT POST AND EXTERIOR GROUNDING ELECTRODE SYSTEM.
3. SIZE SPD DISCONNECT PER MANUFACTURER RECOMMENDATIONS.
4. #1/0 BARE STRANDED TO GROUNDING ELECTRODE SYSTEM. BOND TO ALL GROUNDS PER NEC REQUIREMENTS.
5. MOTOR CIRCUIT PROTECTOR AS RECOMMENDED BY THE MANUFACTURER.
6. SEE SPECIFICATION SECTION (16521) FOR INPUT FILTER REQUIREMENTS.

PROJECT TITLE:
WILLISTON WATER RESOURCE RECOVERY FACILITY (WRRF) REUSE PROJECT

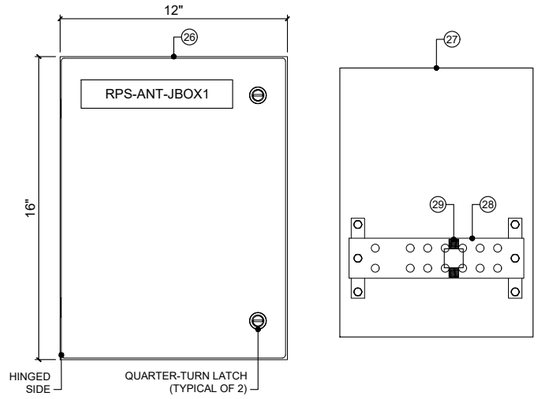
Advanced Engineering and Environmental Services, LLC www.ae2s.com

SHEET TITLE:
PUMP STATION ONE-LINE DIAGRAM

CLIENT:
CITY OF WILLISTON
WILLISTON, ND

PREPARED BY: IPS
CHECKED BY: MAW
APPROVED BY: AMW

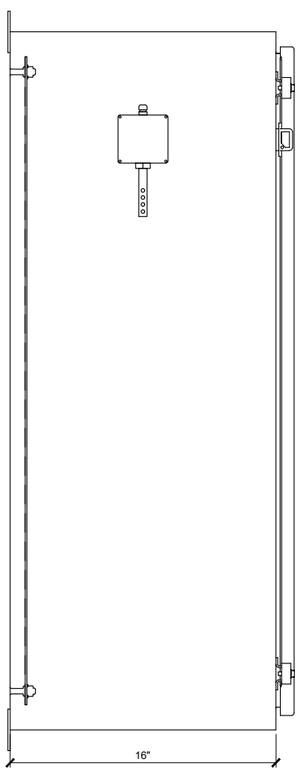
PROJECT NO: P00581-2025-003
DATE: FEBRUARY 2026
ALT. PROJECT NO:
SHEET DESIGNATOR:
SHEET NO: **E601**



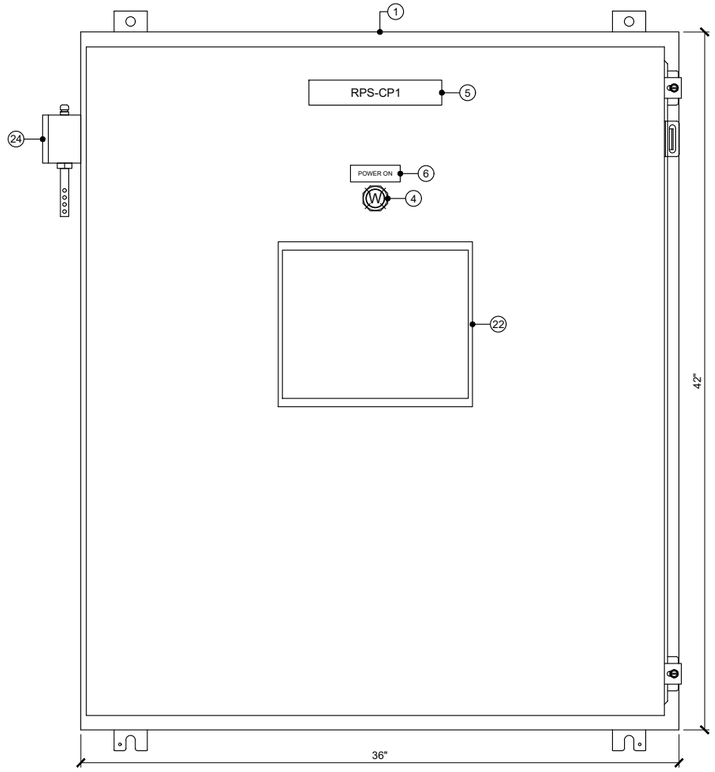
2 E602 ANTENNA CABLE JUNCTION BOX LAYOUT
RPS-ANT-JBOX1

PARTS LIST

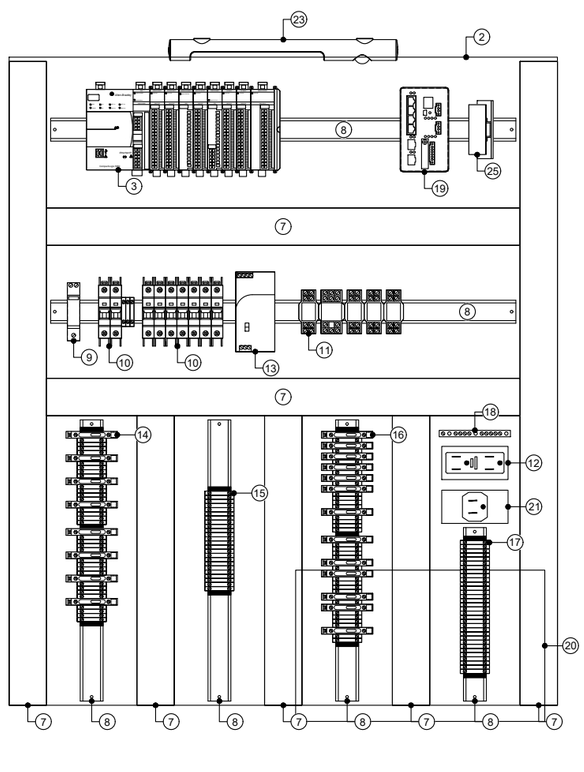
MARK	DESCRIPTION
1	WALL MOUNT ENCLOSURE
2	SUB-PANEL
3	ALLEN BRADLEY PLC (SEE PLC I/O SCHEDULE)
4	30.5mm, LED PANEL LIGHT, WHITE LENS
5	1.5" X 8" BLACK NAMEPLATE WITH WHITE LETTERING (0.5" TEXT)
6	1" X 3" BLACK NAMEPLATE WITH WHITE LETTERING (0.25" TEXT)
7	WIREWAY W/COVER, SIZED TO FIT
8	ZINC PLATED, CHROMATED STEEL, 35mm X 7.5mm DIN RAIL
9	SURGE PROTECTION/LIGHTNING PROTECTION
10	DIN RAIL MOUNTED CIRCUIT BREAKER(S)
11	GENERAL PURPOSE BLADE BASE RELAY
12	20 AMP GFCI RECEPTACLE
13	120VAC/24VDC POWER SUPPLY
14	GENERAL PURPOSE TERMINAL BLOCKS (ASSOCIATED END BARRIERS, END STOPS, SEPARATION PLATES, ETC.), FUSE TERMINALS AND FUSES W/BLOWN FUSE INDICATOR (ANALOG INPUTS - SEE TYPICAL WIRING SCHEMATICS)
15	GENERAL PURPOSE TERMINAL BLOCKS (ASSOCIATED END BARRIERS, END STOPS, SEPARATION PLATES, ETC.), FUSE TERMINALS AND FUSES W/BLOWN FUSE INDICATOR (ANALOG OUTPUTS - SEE TYPICAL WIRING SCHEMATICS)
16	GENERAL PURPOSE TERMINAL BLOCKS (ASSOCIATED END BARRIERS, END STOPS, SEPARATION PLATES, ETC), FUSE TERMINALS AND FUSES W/BLOWN FUSE INDICATOR (DIGITAL INPUTS - SEE TYPICAL WIRING SCHEMATICS)
17	GENERAL PURPOSE RELAY TERMINAL BLOCKS, SCREW CONNECTION, (ASSOCIATED END BARRIERS, END STOPS, SEPARATION PLATES, ETC.) (RELAY OUTPUTS - SEE TYPICAL WIRING SCHEMATICS)
18	GROUND BUSS BAR
19	ETHERNET SWITCH
20	UNINTERRUPTIBLE POWER SUPPLY
21	UNINTERRUPTIBLE POWER SUPPLY RECEPTACLE
22	OPERATOR INTERFACE
23	LIGHT PACKAGE, LED, DOOR SWITCH
24	AIR TEMPERATURE TRANSMITTER
25	CELLULAR MODEM
26	HINGED DOOR, PAINTED STEEL WALL-MOUNT ENCLOSURE, NVENT/HOFFMAN CSD16126, OR EQUIVALENT FOR INDOOR APPLICATIONS OR HINGED DOOR, STAINLESS STEEL WALL MOUNT ENCLOSURE, HOFFMAN A16H1206SSLP OR EQUIVALENT FOR OUTDOOR ENCLOSURES.
27	INNER SUB-PANEL
28	HUBBELL GROUNDING AND BONDING INSULATED COPPER BUS BAR (2"X10"X1/4"). PART# HBBB14210A, OR EQUIVALENT.
29	ANTENNA LIGHTNING ARRESTOR (POLYPHASER)



SIDE VIEW



ENCLOSURE LAYOUT



SUB-PANEL LAYOUT

1 E602 CONTROL PANEL LAYOUT
RPS-CP1

Certification of Individual Project Design Disciplines Are Included On Their Individual Drawings, Respectively

REGISTERED PROFESSIONAL ENGINEER
ADAM WAHLER
PE-7886
02-20-2026
Date
NORTH DAKOTA

STATUS: FINAL

SYM	DATE	APPR

CONTROL PANEL NOTES

1. NEMA TYPE 12, 14 GAUGE STEEL WALL MOUNT ENCLOSURE WITH SUB PANEL
2. SINGLE DOOR HINGED ENCLOSURE
3. APPROXIMATE DIMENSIONS: H: 42", W: 36", D: 16"
4. PROVIDE A COMPLETE WORKING SYSTEM WITH ALL ASSOCIATED CABLES, CONNECTORS, FASTENERS, ETC.
5. PANEL TO BE UL 508A LISTED
6. SUB-PANEL LAYOUT IS TO BE USED AS A GENERAL LAYOUT. EXACT DIMENSIONS, COMPONENT QUANTITIES AND EXACT LAYOUT TO BE DETERMINED BY THE HARDWARE SYSTEM INTEGRATOR.

ANTENNA JUNCTION BOX NOTES

1. ENCLOSURE WITH SUB PANEL SHALL BE A NEMA TYPE 4, 12, 13, IP66, 16 GAUGE STEEL (INTERIOR) OR NEMA TYPE 4X, STAINLESS STEEL (EXTERIOR).
2. APPROXIMATE ENCLOSURE DIMENSIONS: H: 16", W: 12", D: 6"
3. SUB-PANEL LAYOUT IS TO BE USED AS A GENERAL LAYOUT ONLY. FINAL EXACT DIMENSIONS, COMPONENT QUANTITIES AND EXACT LAYOUT TO BE CONFIRMED.
4. ENCLOSURE TO BE UL LISTED.

PROJECT TITLE:
WILLISTON WATER RESOURCE RECOVERY FACILITY (WRRF) REUSE PROJECT

Advanced Engineering and Environmental Services, LLC www.ae2s.com

SHEET TITLE:
CONTROL PANEL LAYOUT

CLIENT:
CITY OF WILLISTON
WILLISTON, ND

PREPARED BY: IPS
CHECKED BY: MAW
APPROVED BY: AMW

PROJECT NO: P00581-2025-003
DATE: FEBRUARY 2026
ALT. PROJECT NO:
SHEET DESIGNATOR:
SHEET NO: **E602**

File: C:\Users\ianm\DOCACCDocs\AE2S\00581-2025-003 Williston WRRF Water Reuse - Muni Golf\Project Files\06-Electrical\Autocad\Plan Sheets\E-Control Panel.dwg

Plotted By: Ian Smith Date: Monday, February 23, 2026

Rack/Slot	Point	Type	Tagname	Description	EGU Lo	EGU Hi	EGU Tag	Signal
RACK 0				COMPACTLOGIX 5380 PROCESSOR				
SLOT 0								
5069-L306ER								
RACK 0	0	AI	RPS-TT1.TI	REUSE PUMP STATION AMBIENT TEMPERATURE	-13.0	167.0	°F	4-20 mA
SLOT 1	1	AI	RPS-PIT1.PI	REUSE PUMP STATION INFLUENT PRESSURE	0.0	300.0	PSI	4-20 mA
5069-IF4IH	2	AI	RPS-PIT2.PI	REUSE PUMP STATION EFFLUENT PRESSURE	0.0	300.0	PSI	4-20 mA
	3	AI	RPS-FIT1.FI	REUSE PUMP STATION EFFLUENT FLOW	0.0	600.0	GPM	4-20 mA
RACK 0	0	AI	RPS-RUP1.SI	REUSE PUMP STATION REUSE PUMP No. 1 SPEED FEEDBACK	0.0	100.0	%	4-20 mA
SLOT 2	1	AI	RPS-RUP2.SI	REUSE PUMP STATION REUSE PUMP No. 2 SPEED FEEDBACK	0.0	100.0	%	4-20 mA
5069-IF4IH	2	AI	RPS-RUP3.SI	REUSE PUMP STATION REUSE PUMP No. 3 SPEED FEEDBACK	0.0	100.0	%	4-20 mA
	3	AI		WIRED SPARE				4-20mA
RACK 0				ADDRESS RESERVE MODULE				
SLOT 3								
5069-ARM								
RACK 0	0	AO	RPS-RUP1.SI	REUSE PUMP STATION REUSE PUMP No. 1 SPEED COMMAND	0.0	60.0	HZ	4-20 mA
SLOT 4	1	AO	RPS-RUP2.SI	REUSE PUMP STATION REUSE PUMP No. 2 SPEED COMMAND	0.0	60.0	HZ	4-20 mA
5069-OF8	2	AO	RPS-RUP3.SI	REUSE PUMP STATION REUSE PUMP No. 3 SPEED COMMAND	0.0	60.0	HZ	4-20 mA
	3	AO		WIRED SPARE				4-20 mA
	4	AO		WIRED SPARE				4-20 mA
	5	AO		WIRED SPARE				4-20 mA
	6	AO		WIRED SPARE				4-20 mA
	7	AO		WIRED SPARE				4-20 mA
RACK 0				FIELD POTENTIAL DISTRIBUTOR				
5069-FPD								
RACK 0	0	DI	RPS-DP1.XA	REUSE PUMP STATION DISTRIBUTION PANEL SPD FAILURE	ALARM	NORMAL		120VAC
SLOT 5	1	DI	RPS-CP1.JA	REUSE PUMP STATION CONTROL PANEL CONTROL POWER FAILURE	ALARM	NORMAL		120VAC
5069-IA16	2	DI	RPS-CP1.EA	REUSE PUMP STATION CONTROL PANEL UPS POWER FAILURE	ALARM	NORMAL		120VAC
	3	DI	RPS-CP1.YA	REUSE PUMP STATION CONTROL PANEL UPS FAULT	ALARM	NORMAL		120VAC
	4	DI	RPS-CP1.XA	REUSE PUMP STATION CONTROL PANEL SPD FAILURE	ALARM	NORMAL		120VAC
	5	DI		WIRED SPARE				120VAC
	6	DI	RPS-FLS1.LAH	REUSE PUMP STATION FLOODED	ALARM	NORMAL		120VAC
	7	DI	RPS-DS1.ZIO	REUSE PUMP STATION MAIN ACCESS INTRUSION	ALARM	NORMAL		120VAC
	8	DI	RPS-DS2.ZIO	REUSE PUMP STATION SECONDARY ACCESS INTRUSION	ALARM	NORMAL		120VAC
	9	DI		WIRED SPARE				120VAC
	10	DI		WIRED SPARE				120VAC
	11	DI		WIRED SPARE				120VAC
	12	DI		WIRED SPARE				120VAC
	13	DI		WIRED SPARE				120VAC
	14	DI		WIRED SPARE				120VAC
	15	DI		WIRED SPARE				120VAC
RACK 0	0	DI	RPS-RUP1.YN	REUSE PUMP STATION REUSE PUMP No. 1 IN AUTO	LOCAL	IN AUTO		120VAC
SLOT 6	1	DI	RPS-RUP1.YL	REUSE PUMP STATION REUSE PUMP No. 1 RUNNING	OFF	RUNNING		120VAC
5069-IA16	2	DI	RPS-RUP1.YA	REUSE PUMP STATION REUSE PUMP No. 1 FAULT	ALARM	NORMAL		120VAC
	3	DI	RPS-RUP1.TAH	REUSE PUMP STATION REUSE PUMP No. 1 OVERTEMP	ALARM	NORMAL		120VAC
	4	DI		WIRED SPARE				120VAC
	5	DI	RPS-RUP2.YN	REUSE PUMP STATION REUSE PUMP No. 2 IN AUTO	LOCAL	IN AUTO		120VAC
	6	DI	RPS-RUP2.YL	REUSE PUMP STATION REUSE PUMP No. 2 RUNNING	OFF	RUNNING		120VAC
	7	DI	RPS-RUP2.YA	REUSE PUMP STATION REUSE PUMP No. 2 FAULT	ALARM	NORMAL		120VAC
	8	DI	RPS-RUP2.TAH	REUSE PUMP STATION REUSE PUMP No. 2 OVERTEMP	ALARM	NORMAL		120VAC
	9	DI		WIRED SPARE				120VAC
	10	DI	RPS-RUP3.YN	REUSE PUMP STATION REUSE PUMP No. 3 IN AUTO	LOCAL	IN AUTO		120VAC
	11	DI	RPS-RUP3.YL	REUSE PUMP STATION REUSE PUMP No. 3 RUNNING	OFF	RUNNING		120VAC
	12	DI	RPS-RUP3.YA	REUSE PUMP STATION REUSE PUMP No. 3 FAULT	ALARM	NORMAL		120VAC
	13	DI	RPS-RUP3.TAH	REUSE PUMP STATION REUSE PUMP No. 3 OVERTEMP	ALARM	NORMAL		120VAC
	14	DI		WIRED SPARE				120VAC
	15	DI		WIRED SPARE				120VAC
RACK 0	0	RO	RPS-RUP1.MC	REUSE PUMP STATION REUSE PUMP No. 1 REQUIRED	OFF	REQUIRED		RELAY
SLOT 7	1	RO	RPS-RUP2.MC	REUSE PUMP STATION REUSE PUMP No. 2 REQUIRED	OFF	REQUIRED		RELAY
5069-OW16	2	RO	RPS-RUP3.MC	REUSE PUMP STATION REUSE PUMP No. 3 REQUIRED	OFF	REQUIRED		RELAY
	3	RO		WIRED SPARE				RELAY
	4	RO		WIRED SPARE				RELAY
	5	RO		WIRED SPARE				RELAY
	6	RO		WIRED SPARE				RELAY
	7	RO		WIRED SPARE				RELAY
	8	RO		WIRED SPARE				RELAY
	9	RO		WIRED SPARE				RELAY
	10	RO		WIRED SPARE				RELAY
	11	RO		WIRED SPARE				RELAY
	12	RO		WIRED SPARE				RELAY
	13	RO		WIRED SPARE				RELAY
	14	RO		WIRED SPARE				RELAY
	15	RO		WIRED SPARE				RELAY

1 E603 **PLC IO SCHEDULE**
RPS-CP1

AE2S

Certification of Individual Project Design Disciplines Are Included On Their Individual Drawings, Respectively

REGISTERED PROFESSIONAL ENGINEER
ADAM WAHLER
PE-7886
02-20-2026
Date
NORTH DAKOTA

STATUS: FINAL

SYM	DATE	APPR

PROJECT TITLE:
WILLISTON WATER RESOURCE RECOVERY FACILITY (WRRF) REUSE PROJECT

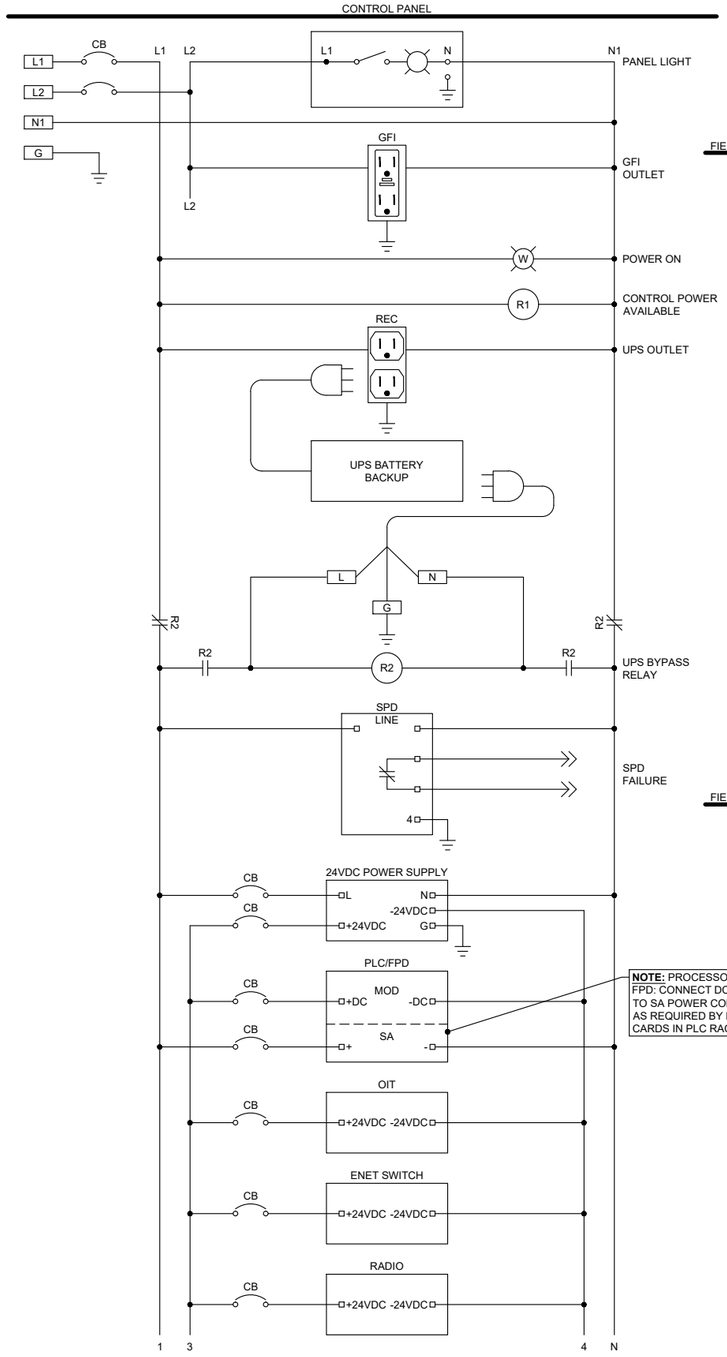
Advanced Engineering and Environmental Services, LLC www.ae2s.com

SHEET TITLE:
PLC IO SCHEDULE

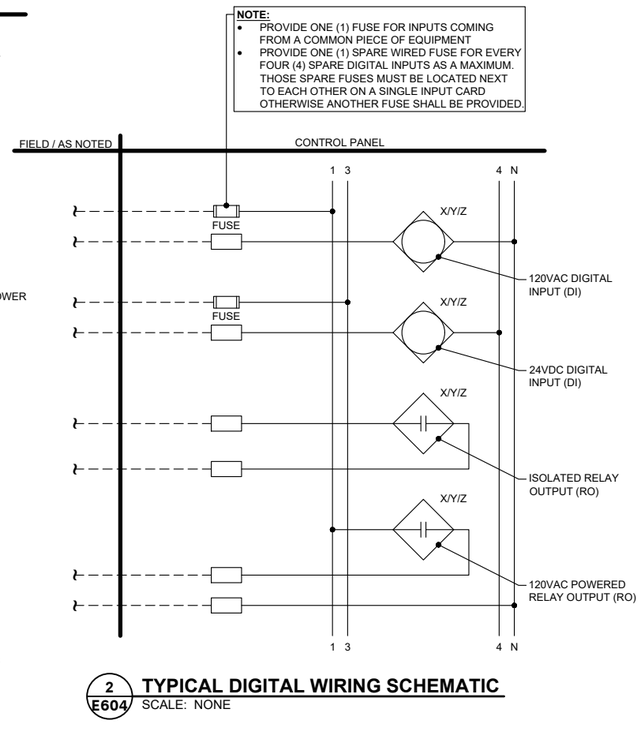
CLIENT:
CITY OF WILLISTON
WILLISTON, ND

PREPARED BY: IPS
CHECKED BY: MAW
APPROVED BY: AMW

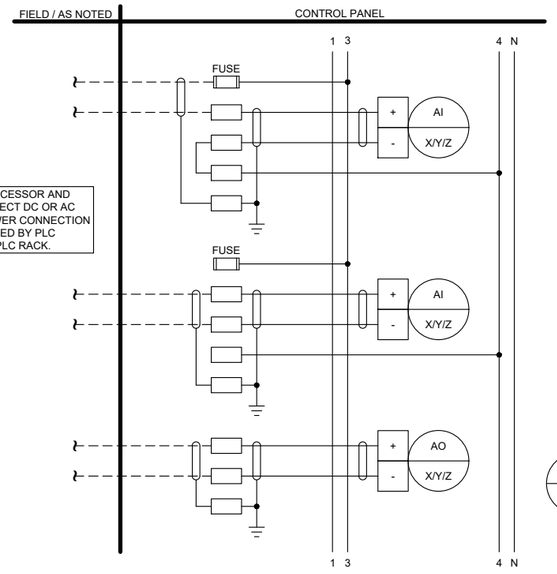
PROJECT NO: P00581-2025-003
DATE: FEBRUARY 2026
ALT. PROJECT NO:
SHEET DESIGNATOR:
SHEET NO: **E603**



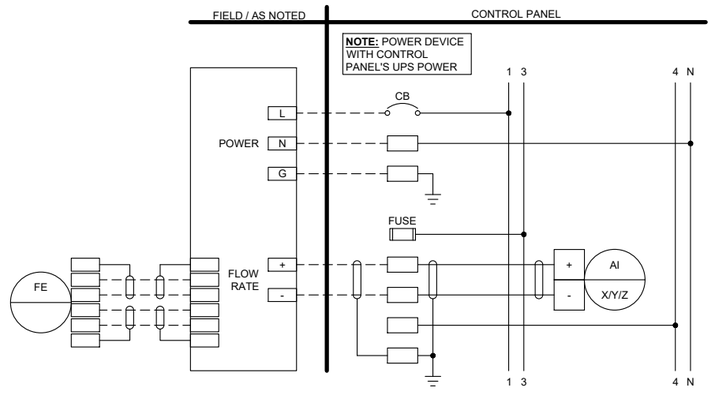
1 E604 **TYPICAL PANEL POWER WIRING SCHEMATIC**
SCALE: NONE



2 E604 **TYPICAL DIGITAL WIRING SCHEMATIC**
SCALE: NONE



3 E604 **TYPICAL ANALOG WIRING SCHEMATIC**
SCALE: NONE



4 E604 **TYPICAL FLOW METER WIRING SCHEMATIC**
SCALE: NONE

CONTROL LABELING REFERENCE

X Y Z — CHANNEL / SLOT / RACK
1 2 3 — CHANNEL - 3 / SLOT - 2 / RACK - 1
EXAMPLE: 1/2/3

POWER RAIL LEGEND

CALLOUT	DESCRIPTION
L1,N1	120VAC NON-UPS POWER
1,N	120VAC UPS POWER
3,4	24VDC UPS POWER

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Certification of Individual Project Design Disciplines Are Included On Their Individual Drawings, Respectively

REGISTERED PROFESSIONAL ENGINEER
ADAM WAHLER
PE-7886
02-20-2026
Date
NORTH DAKOTA

STATUS: FINAL

APPR	DATE	SYM

PROJECT TITLE:
WILLISTON WATER RESOURCE RECOVERY FACILITY (WRRF) REUSE PROJECT

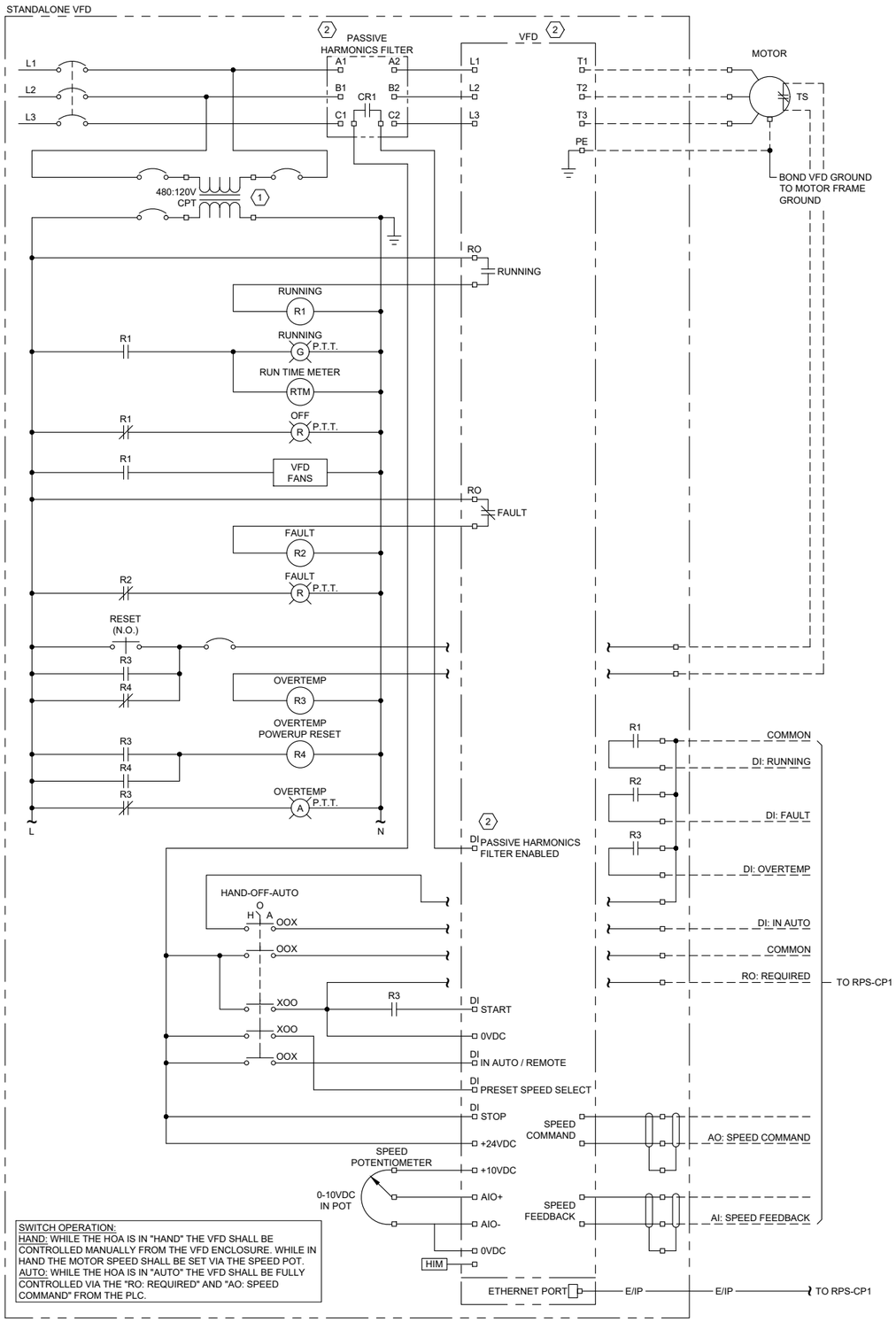
Advanced Engineering and Environmental Services, LLC www.ae2s.com

SHEET TITLE:
TYPICAL WIRING DIAGRAMS

CLIENT:
CITY OF WILLISTON
WILLISTON, ND

PREPARED BY: IPS
CHECKED BY: MAW
APPROVED BY: AMW

PROJECT NO: P00581-2025-003
DATE: FEBRUARY 2026
ALT. PROJECT NO:
SHEET DESIGNATOR:
SHEET NO: **E604**



1 E605 **VFD WIRING SCHEMATIC**
RPS-RUP1-VFD1, RPS-RUP2-VFD1

CONSTRUCTION NOTES

1. THE CONTROL POWER TRANSFORMER SHALL BE SIZED ADEQUATELY FOR ALL MOTOR RELATED CONTROLS SUCH AS THE CONTROL CIRCUIT AND MOTOR HEATER.
2. REFER TO THE SPECIFICATIONS FOR VFD TYPE AND INPUT/OUTPUT FILTERING REQUIREMENTS. THE INTENT IS TO PULL THE PASSIVE HARMONIC CAPACITORS IN AND DROP OUT OF THE CIRCUIT WHEN VFD IS AT SPEED. THIS IS AT APPROXIMATELY 39HZ OR 5% LOWER THAN THE MINIMUM MOTOR SPEED, WHICH EVER IS LOWER. CR1 IS THE CONTROL RELAY FOR PULLING IN AND OUT THE CORRECTION CAPACITORS.

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REGISTERED PROFESSIONAL ENGINEER
ADAM WAHLER
PE-7886
02-20-2026
Date
NORTH DAKOTA

STATUS: FINAL

APPR	DATE	SYM

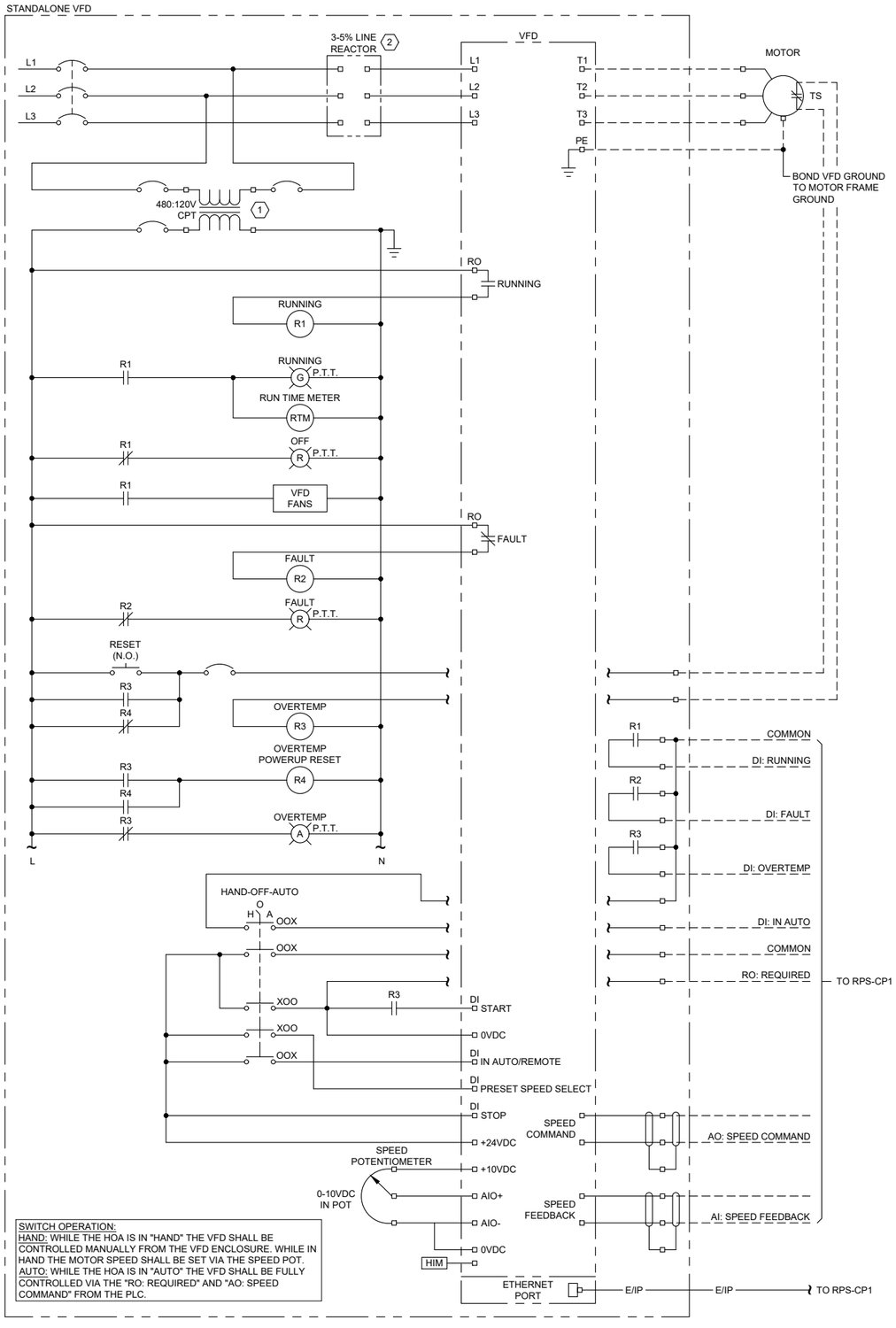
PROJECT TITLE:
WILLISTON WATER RESOURCE RECOVERY FACILITY (WRRF) REUSE PROJECT
Advanced Engineering and Environmental Services, LLC www.ae2s.com

SHEET TITLE:
VFD WIRING SCHEMATIC

CLIENT:
CITY OF WILLISTON
WILLISTON, ND

PREPARED BY: IPS
CHECKED BY: MAW
APPROVED BY: AMW

PROJECT NO: P00581-2025-003
DATE: FEBRUARY 2026
ALT. PROJECT NO:
SHEET DESIGNATOR:
SHEET NO: **E605**



1 E606 **VFD WIRING SCHEMATIC**
RPS-RUP3-VFD1

Certification of Individual Project Design Disciplines Are Included On Their Individual Drawings, Respectively

REGISTERED PROFESSIONAL ENGINEER
ADAM WAHLER
PE-7886
02-20-2026
Date
NORTH DAKOTA

STATUS: **FINAL**

SYM	DATE	APPR

CONSTRUCTION NOTES

1. THE CONTROL POWER TRANSFORMER SHALL BE SIZED ADEQUATELY FOR ALL MOTOR RELATED CONTROLS SUCH AS THE CONTROL CIRCUIT AND MOTOR HEATER.
2. THE VFD SHALL BE 6 PULSE WITH INPUT AND OUTPUT FILTERING IN TYPE. REFER TO THE SPECIFICATIONS FOR DETAILS.

PROJECT TITLE:
WILLISTON WATER RESOURCE RECOVERY FACILITY (WRRF) REUSE PROJECT

Advanced Engineering and Environmental Services, LLC www.ae2s.com

SHEET TITLE:
VFD WIRING SCHEMATIC

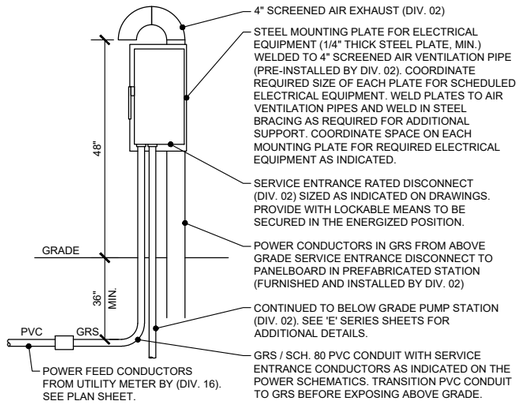
CLIENT:
CITY OF WILLISTON
WILLISTON, ND

PREPARED BY: IPS
CHECKED BY: MAW
APPROVED BY: AMW

PROJECT NO: P00581-2025-003
DATE: FEBRUARY 2026
ALT. PROJECT NO:

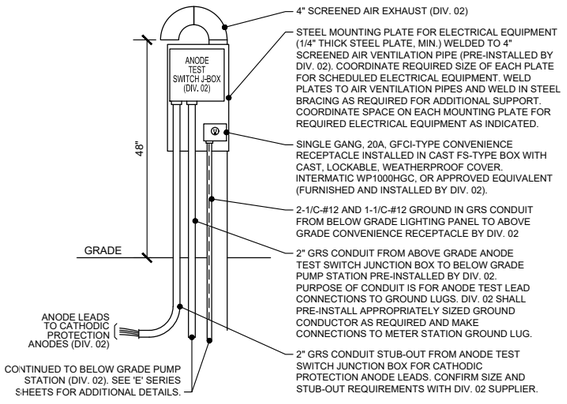
SHEET DESIGNATOR:

SHEET NO: **E606**



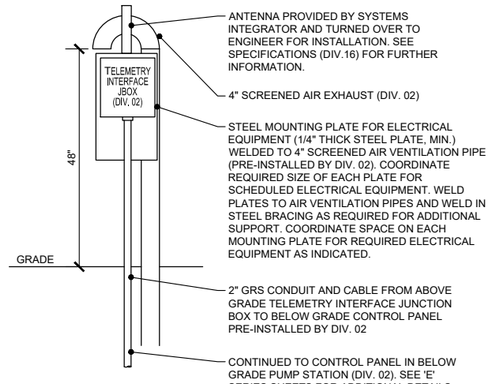
1 E701 SERVICE ENTRANCE RATED DISCONNECT ELEVATION DETAIL

SCALE: NONE EQPM067



2 E701 ANODE TEST SWITCH JBOX ELEVATION DETAIL

SCALE: NONE EQPM068



3 E701 ANTENNA JBOX ELEVATION DETAIL

SCALE: NONE EQPM069

4 E701 PRESSURE GAUGE TRANSMITTER ASSEMBLY w/ SAMPLE TAP

SCALE: NONE EQPM121

5 E701 CONDUIT 'DRAINAGE' TEE DETAIL

SCALE: NONE EQPM020

6 E701 WALL MOUNTED EQUIPMENT DETAIL

SCALE: NONE EQPM022

AE2S
Certification of Individual Project Design Disciplines Are Included On Their Individual Drawings, Respectively

REGISTERED PROFESSIONAL ENGINEER
ADAM WAHLER
PE-7886
02-20-2026
Date
NORTH DAKOTA

STATUS: FINAL

SYM	DATE	APPR

PROJECT TITLE:
WILLISTON WATER RESOURCE RECOVERY FACILITY (WRRF) REUSE PROJECT

Advanced Engineering and Environmental Services, LLC www.ae2s.com

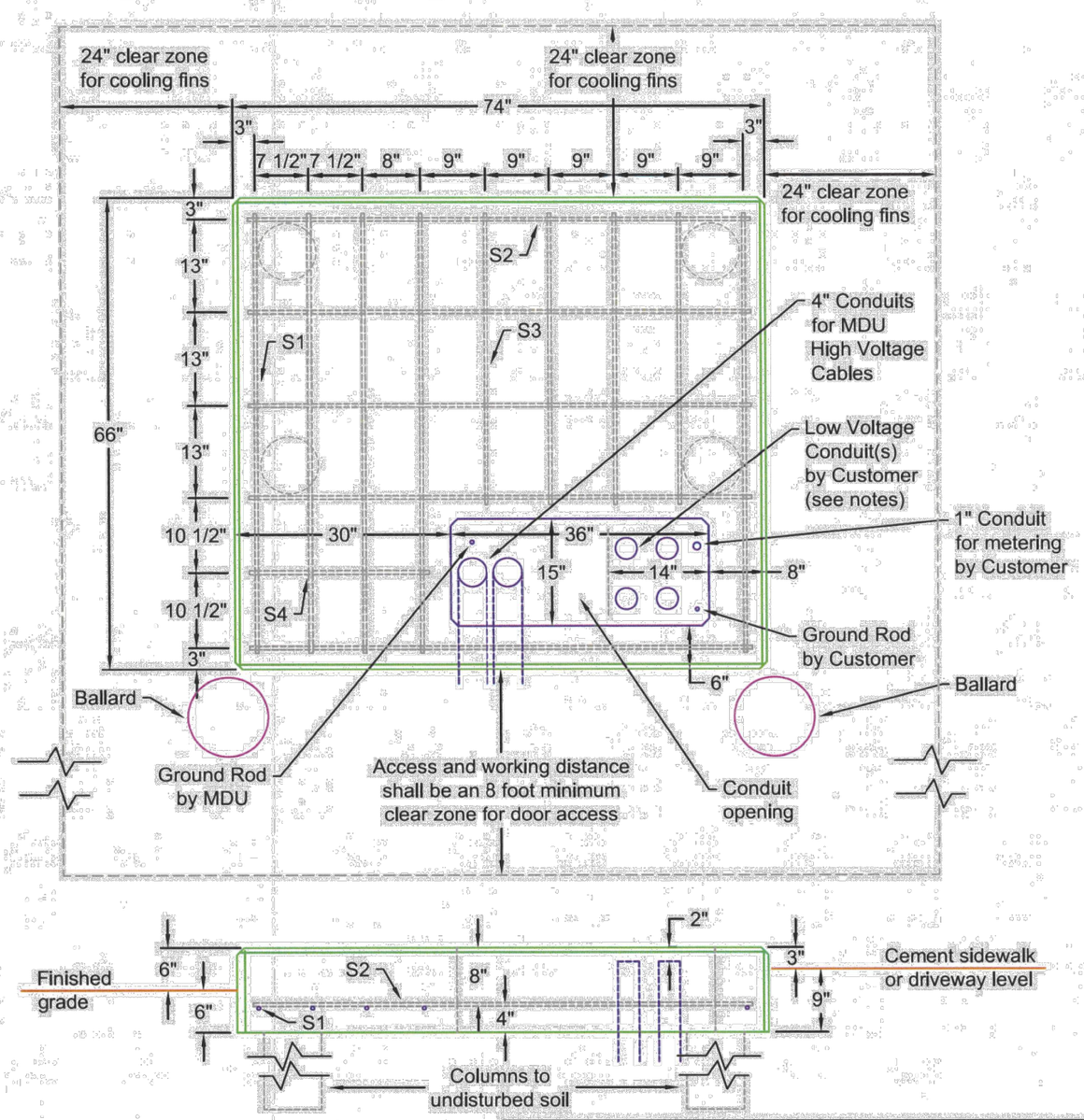
SHEET TITLE:
VARIOUS DETAILS

CLIENT:
CITY OF WILLISTON
WILLISTON, ND

PREPARED BY: IPS
CHECKED BY: MAW
APPROVED BY: AMW

PROJECT NO: P00581-2025-003
DATE: FEBRUARY 2026
ALT. PROJECT NO:
SHEET DESIGNATOR:
SHEET NO: **E701**

NOTE: Entire pad must be 5' from ANY building.



TRANSFORMER LOCATION

1. Entire pad must be five feet from any building.
2. All oil-filled padmounted transformers must be installed so any flow of oil resulting from a failure of the transformer will flow away from any structure.
3. A transformer should be located away from traffic areas or protected with ballards such as concrete filled pipes or steel bumper posts, provided by the customer.
4. When locating pad, consider overhead clearance for possible transformer replacement.
5. Compact soil to avoid tilting and settling. Columns required except on undisturbed soil.

STEEL REINFORCING ROD

MARK	QTY.	SIZE	LENGTH
S1	5	1/2"	62"
S2	5	1/2"	70"
S3	4	1/2"	41"
S4	1	1/2"	25"

NOTES:

1. Transformer pad, service cable, conduit, and ground rod or mat for service cable grounding are furnished by customer; connections by company.
2. Reinforcing steel must be secured with tie wire at all intersections.
3. All exposed edges and corners to have 1" chamfer.
4. Minimum of 1.2 Cubic Yards of concrete required.
5. Low voltage conduits by customer must be installed within 14" area noted.
6. Where the customer has more than four parallel conductors, a CT/Transition Cabinet and conduits to the transformer location may be required.
7. Top surface shall be level for concrete pad.

CONCRETE PAD
FOR 3-PH TRANSFORMER
SIZES 45 THROUGH 300 KVA

3/28/2014	CW	REDRAWN IN AUTOCAD
6/2/1999	CAH	CHANGE FRONT CLEAR ZONE & CENTER
6/2/1999	CAH	MOVE CONDUIT OPENING 7" TO THE RIGHT

APPROVED: DLA
DATE: 04/11/14

MDU® ELECTRIC DISTRIBUTION STANDARDS

SCALE: NONE
DRAWING NO: 19-803

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Certification of Individual Project Design Disciplines Are Included On Their Individual Drawings, Respectively

REGISTERED PROFESSIONAL ENGINEER
ADAM WAHLER
PE-7886
02-20-2026
Date
NORTH DAKOTA

STATUS: FINAL

SYM	DATE	APPR

PROJECT TITLE: WILLISTON WATER RESOURCE RECOVERY FACILITY (WRRF) REUSE PROJECT

Advanced Engineering and Environmental Services, LLC www.ae2s.com

SHEET TITLE: VARIOUS DETAILS

CLIENT: CITY OF WILLISTON, WILLISTON, ND

PREPARED BY: IPS
CHECKED BY: MAW
APPROVED BY: AMW

PROJECT NO: P00581-2025-003
DATE: FEBRUARY 2026
ALT. PROJECT NO:
SHEET DESIGNATOR:
SHEET NO: E702

CABLE AND CONDUIT SCHEDULE

TAGNAME	IDENTIFIER	CONDUIT QTY	CONDUIT SIZE	COMBINED CONDUIT ID	SERVICE RATING VOLT	SERVICE RATING PHASE	CONDUCTORS # OF PARALLEL SETS	CONDUCTORS CURRENT CARRYING QTY	CONDUCTORS CURRENT CARRYING TYPE	CONDUCTORS CURRENT CARRYING SIZE	CONDUCTORS NTRL	CONDUCTORS GND	FROM	TO	NOTES CABLE TYPE
UTILITY DISCONNECT		1	3-1/2"		277/480	3	1	3	1/C	#500	#500	#3	UTILITY TRANSFORMER	COLD SEQUENCE UTILITY DISCONNECT	TYPE P2
RPS-UTIL-MTR1		1	3-1/2"		277/480	3	1	3	1/C	#500	#500	#3	COLD SEQUENCE UTILITY DISCONNECT	RPS-UTIL-MTR1	TYPE P2
RPS-SE-DISC1		1	3-1/2"		277/480	3	1	3	1/C	#500	#500	#3	RPS-UTIL-MTR1	RPS-SE-DISC1	TYPE P2
RPS-DP1	A	1	3-1/2"		277/480	3	1	3	1/C	#500	#500	#3	RPS-SE-DISC1	RPS-DP1	TYPE P2
	B	1	3/4"		CONTROL	-	-	2	1/C	#14	-	-	RPS-DP1	RPS-CP1	TYPE P1
RPS-RUP1	A	1	1-1/2"		480	3	1	3	1/C	#1	-	#6	RPS-DP1	RPS-RUP1-VFD1	TYPE P1
	B	1	2"		480	3	1	1	3/C	#1	-	#1	RPS-RUP1-VFD1	RPS-RUP1	TYPE P4
	C	1	3/4"		CONTROL	-	-	2	1/C	#14	-	-	RPS-RUP1-VFD1	RPS-RUP1 (RPS-RUP1-TSH1)	TYPE P1
	D	1	3/4"		CONTROL	-	-	8	1/C	#14	-	-	RPS-CP1	RPS-RUP1-VFD1	TYPE P1
	E	1	1"		SIGNAL	-	-	2	2/C	#16	-	SHIELD	RPS-CP1	RPS-RUP1-VFD1	TYPE S1
	F	1	3/4"		DATA	-	-	1	CAT 6 SHIELDED	-	-	-	RPS-CP1	RPS-RUP1-VFD1	TYPE D3
RPS-RUP2	A	1	1-1/2"		480	3	1	3	1/C	#1	-	#6	RPS-DP1	RPS-RUP2-VFD1	TYPE P1
	B	1	2"		480	3	1	1	3/C	#1	-	#1	RPS-RUP2-VFD1	RPS-RUP2	TYPE P4
	C	1	3/4"		CONTROL	-	-	2	1/C	#14	-	-	RPS-RUP2-VFD1	RPS-RUP2 (RPS-RUP2-TSH1)	TYPE P1
	D	1	3/4"		CONTROL	-	-	8	1/C	#14	-	-	RPS-CP1	RPS-RUP2-VFD1	TYPE P1
	E	1	1"		SIGNAL	-	-	2	2/C	#16	-	SHIELD	RPS-CP1	RPS-RUP2-VFD1	TYPE S1
	F	1	3/4"		DATA	-	-	1	CAT 6 SHIELDED	-	-	-	RPS-CP1	RPS-RUP2-VFD1	TYPE D3
RPS-RUP3	A	1	3/4"		480	3	1	3	1/C	#8	-	#10	RPS-DP1	RPS-RUP3-VFD1	TYPE P1
	B	1	1-1/4"		480	3	1	1	3/C	#10	-	#10	RPS-RUP3-VFD1	RPS-RUP3	TYPE P4
	C	1	3/4"		CONTROL	-	-	2	1/C	#14	-	-	RPS-RUP3-VFD1	RPS-RUP3 (RPS-RUP3-TSH1)	TYPE P1
	D	1	3/4"		CONTROL	-	-	8	1/C	#14	-	-	RPS-CP1	RPS-RUP3-VFD1	TYPE P1
	E	1	1"		SIGNAL	-	-	2	2/C	#16	-	SHIELD	RPS-CP1	RPS-RUP3-VFD1	TYPE S1
	F	1	3/4"		DATA	-	-	1	CAT 6 SHIELDED	-	-	-	RPS-CP1	RPS-RUP3-VFD1	TYPE D3
RPS-XFMR1		1	3/4"		480	1	1	2	1/C	#8	-	#10	RPS-DP1	RPS-XFMR1	TYPE P1
RPS-LP1		1	1-1/4"		120/240	1	1	2	1/C	#4	#4	#8	RPS-XFMR1	RPS-LP1	TYPE P1
RPS-PIT1		1	3/4"		SIGNAL	-	-	1	2/C	#16	-	SHIELD	RPS-CP1	RPS-PIT1	TYPE S1
RPS-PIT2		1	3/4"		SIGNAL	-	-	1	2/C	#16	-	SHIELD	RPS-CP1	RPS-PIT2	TYPE S1
RPS-FIT1	A	1	3/4"		120	1	1	1	1/C	#12	#12	#12	RPS-CP1	RPS-FIT1	TYPE P1
	B	1	3/4"		SIGNAL	-	-	1	2/C	#16	-	SHIELD	RPS-CP1	RPS-FIT1	TYPE S1
	C	1	3/4"		SIGNAL	-	MANUFACTURER'S CABLE						RPS-FIT1	RPS-FE1	TYPE S4
RPS-FLS1		1	3/4"		CONTROL	-	-	1	1/C	#14	-	-	RPS-CP1	RPS-FLS1	TYPE P1
RPS-DS1		1	3/4"		CONTROL	-	-	1	1/C	#14	-	-	RPS-CP1	RPS-DS1	TYPE P1
RPS-DS2		1	3/4"		CONTROL	-	-	1	1/C	#14	-	-	RPS-CP1	RPS-DS2	TYPE P1
RPS-ANT-JBOX1		1	3/4"		ANTENNA	-	-	1	LMR-200	-	-	-	RPS-CP1	RPS-ANT-JBOX1	TYPE A1
RPS-EUH1		1	3/4"		240	1	1	2	1/C	#12	-	#12	RPS-LP1	RPS-EUH1	TYPE P1
RPS-EUH2		1	3/4"		240	1	1	2	1/C	#12	-	#12	RPS-LP1	RPS-EUH2	TYPE P1
RPS-CP1	A	1	3/4"		120	1	1	1	1/C	#12	#12	#12	RPS-LP1	RPS-CP1	TYPE P1
		"	"		120	1	1	1	1/C	#12	#12	#12	RPS-LP1	RPS-CP1	TYPE P1

File: C:\Users\smith\DOCACO2\ccaES2S\00581-2025-003 Williston WRRF Water Reuse - Muni Golf\Project Files\06-Electrical\Autocad\Plan Sheets\E-Cable and Conduit Schedule.dwg

Plotted By: Ian Smith Date: Monday, February 23, 2026

AE2S

Certification of Individual Project Design Disciplines Are Included On Their Individual Drawings, Respectively

REGISTERED PROFESSIONAL ENGINEER
ADAM WAHLER
PE-7886
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NORTH DAKOTA

STATUS: FINAL

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PROJECT TITLE:
WILLISTON WATER RESOURCE RECOVERY FACILITY (WRRF) REUSE PROJECT
Advanced Engineering and Environmental Services, LLC www.ae2s.com

SHEET TITLE:
CABLE AND CONDUIT SCHEDULE

CLIENT:
CITY OF WILLISTON
WILLISTON, ND

PREPARED BY: IPS
CHECKED BY: MAW
APPROVED BY: AMW

PROJECT NO: P00581-2025-003
DATE: FEBRUARY 2026
ALT. PROJECT NO:
SHEET DESIGNATOR:
SHEET NO: **E801**