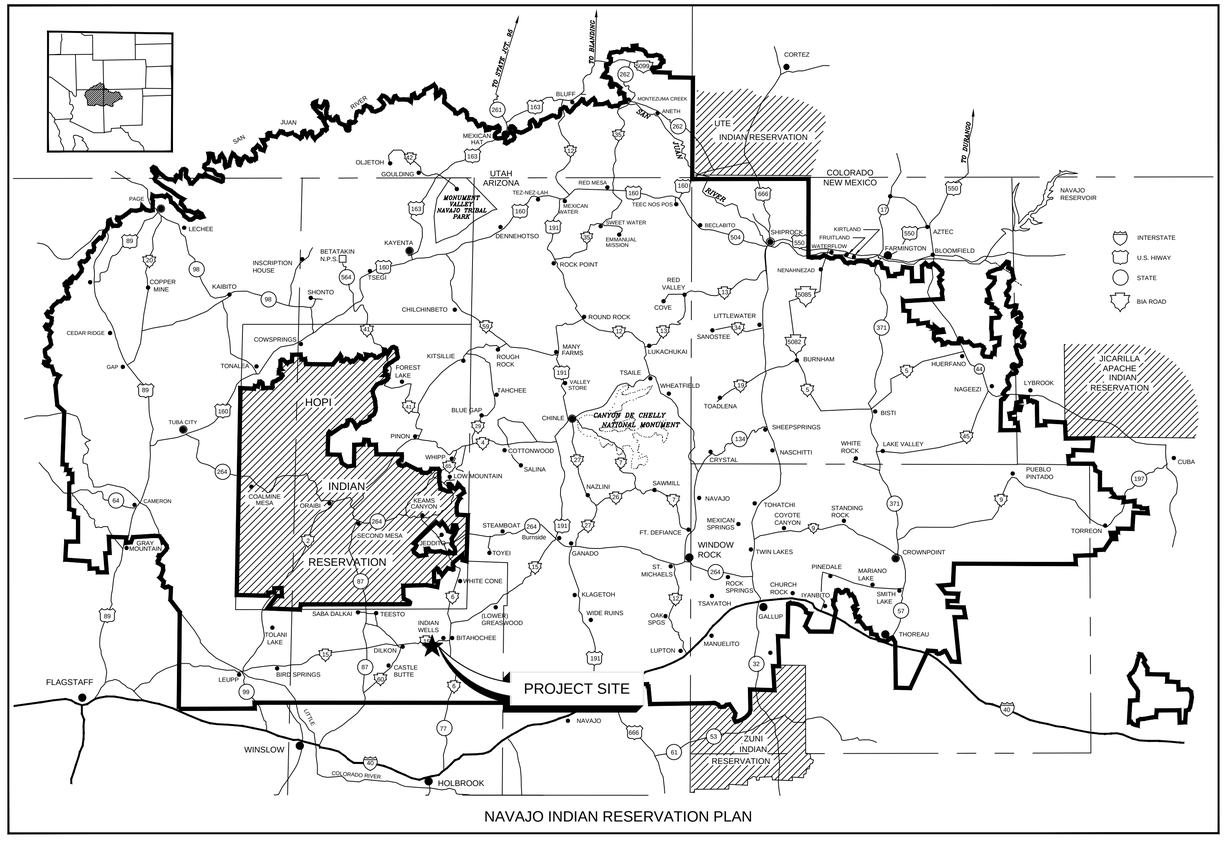
NAVAJO NATION

DILKON PASS
PIPELINE AND PUMP STATION PROJECT
MAY 2022
CONSTRUCTION ISSUE



NAVAJO INDIAN RESERVATION PLAN

LOCATION MAP
PLAN
NOT TO SCALE

PLAN NORTH

Call at least two full working days before you begin excavation.

ARIZONA 811
Arizona Blue Stake, Inc.

Dial 8-1-1 or 1-800-STAKE-IT (782-5348)
In Maricopa County: (602) 263-1100

Brown AND Caldwell
SALT LAKE CITY, UT

CERTIFICATE NO. 36697
STEVEN BRENCHLEY
Date Signed 5/1/2022
ARIZONA, U.S.A.

CONSTRUCTION ISSUE

DILKON PASS
PIPELINE AND
PUMP STATION

REVISIONS

REV	DATE	DESCRIPTION

LINE IS 2 INCHES AT FULL SIZE

DESIGNED: C. WILLMORE
DRAWN: T. PRIDEMORE
CHECKED: C. WILLMORE
CHECKED: ----
APPROVED: S. BRENCHLEY

FILENAME
G-000.dwg
BC PROJECT NUMBER
157520
CLIENT PROJECT NUMBER

GENERAL

COVER SHEET

DRAWING NUMBER
G-000

SHEET NUMBER 1 OF 59

DRAWING INDEX

GENERAL

SHEET NO.	DWG NO.	DWG TITLE
1	G-000	COVER SHEET
2	G-001	DRAWING INDEX
3	G-002	STANDARD SYMBOLS
4	G-003	STANDARD ABBREVIATIONS
5	G-004	VICINTY MAP

SURVEY

SHEET NO.	DWG NO.	DWG TITLE
6	V-001	RESULTS OF SURVEY
7	V-002	RESULTS OF SURVEY
8	V-003	RESULTS OF SURVEY
9	V-004	RESULTS OF SURVEY

DEMOLITION

SHEET NO.	DWG NO.	DWG TITLE
10	CD-100	PUMP STATION DEMOLITION SITE PLAN

CIVIL

SHEET NO.	DWG NO.	DWG TITLE
11	C-001	GENERAL CIVIL NOTES AND SYMBOLS
12	C-002	MISCELLANEOUS DETAILS - 1
13	C-003	MISCELLANEOUS DETAILS - 2
14	C-100	DILKON PASS PUMP STATION GRADING PLAN
15	C-101	DILKON PASS PUMP STATION YARD PIPING PLAN
16	C-110	CHECK VALVE SITE PLAN
17	C-200	KEY MAP
18	C-201	PLAN AND PROFILE STA 10+00 TO 18+00
19	C-202	PLAN AND PROFILE STA 18+00 TO 26+00
20	C-203	PLAN AND PROFILE STA 26+00 TO 34+00
21	C-204	PLAN AND PROFILE STA 34+00 TO 42+00
22	C-205	PLAN AND PROFILE STA 42+00 TO 49+45
23	C-206	PLAN AND PROFILE STA 49+50 TO 57+50
24	C-207	PLAN AND PROFILE STA 57+50 TO 65+50
25	C-208	PLAN AND PROFILE STA 65+50 TO 73+50
26	C-209	PLAN AND PROFILE STA 73+50 TO 81+50
27	C-210	PLAN AND PROFILE STA 81+50 TO 86+79
28	C-211	PLAN AND PROFILE COYOTE WASH

MECHANICAL

SHEET NO.	DWG NO.	DWG TITLE
29	M-001	STANDARD DETAILS
30	M-100	DILKON PASS PUMP STATION BUILDING PLAN
31	M-101	DILKON PASS PUMP STATION BUILDING SECTION

STRUCTURAL

SHEET NO.	DWG NO.	DWG TITLE
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33	S-002	SPECIAL INSPECTIONS - 1
32	S-003	SPECIAL INSPECTIONS - 2
35	S-004	STANDARD DETAILS - 1
36	S-005	STANDARD DETAILS - 2
37	S-006	STANDARD DETAILS - 3
38	S-100	DILKON PASS PUMP STATION BUILDING FOUNDATION PLAN
39	S-101	DILKON PASS PUMP STATION BUILDING ROOF FRAMING PLAN
40	S-102	DILKON PASS PUMP STATION BUILDING SECTION AND DETAILS

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SHEET NO.	DWG NO.	DWG TITLE
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42	A-102	DILKON PASS PUMP STATION ROOF PLAN
43	A-201	DILKON PASS PUMP STATION BUILDING ELEVATION
44	A-202	DILKON PASS PUMP STATION BUILDING SECTIONS
45	A-301	DILKON PASS PUMP STATION DOOR SCHEDULE AND DETAILS

ELECTRICAL

SHEET NO.	DWG NO.	DWG TITLE
46	E-001	SYMBOLS, ABBREVIATIONS AND NOTES
47	E-002	CONTROL AND ONE-LINE DIAGRAM LEGENDS AND SYMBOLS
48	E-003	STANDARD DETAILS - 1
49	E-004	STANDARD DETAILS - 2
50	E-005	STANDARD DETAILS - 3
51	E-100	DILKON PASS PUMP STATION SITE PLAN
52	E-101	DILKON PASS PUMP STATION PLAN
53	E-102	DILKON PASS PUMP STATION ONE-LINE DIAGRAM
54	E-110	DILKON PASS TANK SITE PLAN

INSTRUMENTATION

SHEET NO.	DWG NO.	DWG TITLE
55	I-001	DILKON PASS COMMUNICATIONS BLOCK DIAGRAM

HVAC

SHEET NO.	DWG NO.	DWG TITLE
56	H-001	HVAC LEGEND AND GENERAL NOTES
57	H-101	DILKON PASS PUMP STATION HVAC PLAN AND SECTION
58	H-102	HVAC DETAILS
59	H-501	HVAC SCHEDULES

NHS STANDARD DETAILS FOR WATER

DWG NO.	DWG TITLE
WS-1	1" WATER SERVICE
WS-1A	MATERIAL LIST: 1" SERVICE
WS-1B	MATERIAL LIST: 1" SERVICE
WS-1C	GENERAL NOTES FOR WATER SERVICE
WS-3B	4" x 2" P.R.V.
WS-4C	MATERIAL LIST: 4"X2" P.R.V.
WS-10	AIR RELEASE VALVE DETAIL
WS-11	2" FLUSH VALVE DETAIL
WS-13	MARKER POST DETAIL
WS-14	WATER MAIN VALVE INSTALLATION
WS-19	GRAVITY/THRUST BLOCK DETAILS
WS-19A	GRAVITY/THRUST BLOCK CHART

IHS STANDARD DETAILS

DWG NO.	DWG TITLE
W-33	HDPE WASH CROSSING DETAIL
W-34	FENCE DETAIL FOR STORAGE TANK AND PUMPHOUSE
W-39	SILT FENCE
W-40	STRAW BALES

NTUA TECHNICAL PROVISIONS

DWG NO.	DWG TITLE
1 OF 6	AC TANK PANEL COVER SHEET
2 OF 6	AC TANK CONTROL PANEL DISCRETE IO
3 OF 6	AC TANK CONTROL PANEL ANALOG IO
4 OF 6	AC TANK CONTROL PANEL POWER DISTRIBUTION
5 OF 6	AC TANK CONTROL PANEL BACKPLANE
6 OF 6	AC TANK CONTROL PANEL CABLE PINOUT
1 OF 6	PLC CONTROL PANEL COVER SHEET
2 OF 6	PLC CONTROL PANEL DISCRETE I/O (BOOSTER WITH BOOSTERPAQ)
3 OF 6	PLC CONTROL PANEL ANALOG I/O (BOOSTER WITH BOOSTERPAQ)
4 OF 6	PLC CONTROL PANEL POWER DISTRIBUTION
5 OF 6	PLC CONTROL PANEL BACKPLANE
5A OF 6	PLC CONTROL PANEL WITH SWING OUT PANEL BACKPLANE
6 OF 6	PLC CONTROL PANEL CABLE PINOUT

Brown AND Caldwell

SALT LAKE CITY, UT

CERTIFICATE NO. 36697 STEVEN BRENCHLEY Date Signed 3/3/2022 ARIZONA, U.S.A.

CONSTRUCTION ISSUE

NAVAJO TRIBAL UTILITY AUTHORITY UTILITIES FOR THE NAVAJO NATION NTUA

DILKON PASS PIPELINE AND PUMP STATION

REVISIONS

REV	DATE	DESCRIPTION

LINE IS 2 INCHES AT FULL SIZE

DESIGNED: C. WILLMORE
DRAWN: T. PRIDEMORE
CHECKED: C. WILLMORE
CHECKED: - -
APPROVED: S. BRENCHLEY
FILENAME G-001.dwg
BC PROJECT NUMBER 157520
CLIENT PROJECT NUMBER

GENERAL

DRAWING INDEX

DRAWING NUMBER G-001

SHEET NUMBER 2 OF 59

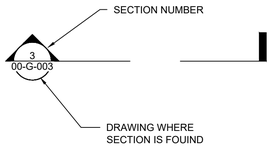
Path: C:\BCPW\D2344900 FILENAME: G-001.DWG PLOT DATE: 3/4/2022 4:16 PM CAD USER: TYLER.PRIDEMORE

CROSS REFERENCING SYSTEM

1. PLAN TITLES:

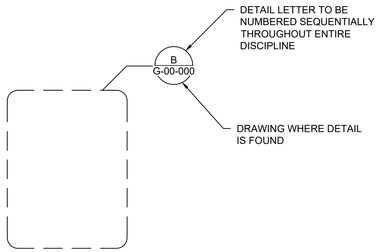
PLAN TITLE
SCALE: 1/4" = 1'-0"

2. SECTION CUTS



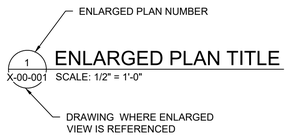
3. DETAIL CALLOUT

A: BY CALLOUT:

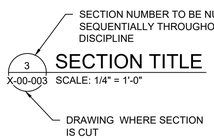


B: BY NOTE: "SEE DETAIL B/D-01-105"
B IS DETAIL REFERENCE LETTER
D-01-105 IS DRAWING WHERE DETAIL IS SHOWN

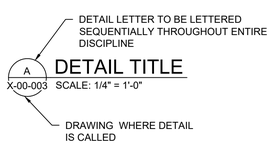
4. ENLARGED PLAN TITLES:



5. SECTION TITLES:



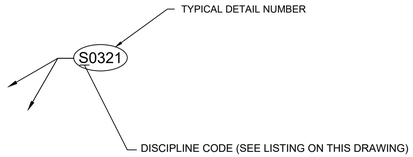
6. DETAIL TITLES:



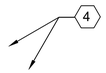
5. TYPICAL DETAIL TITLES

CROSS REFERENCING SYSTEM (CONTINUED)

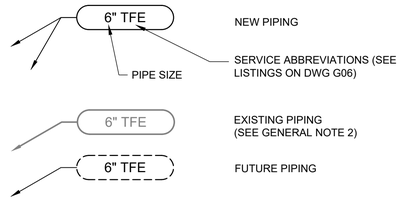
6. STANDARD DETAILS REFERENCE:



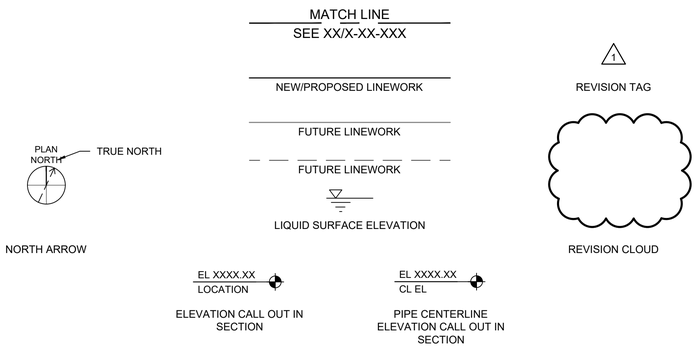
7. KEYNOTES:



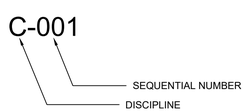
PIPING IDENTIFICATION SYSTEM



MISCELLANEOUS



DRAWING NUMBERING SYSTEM



AREAS
- SEE SHEET 01-C-01 FOR FACILITY INDEX & ASSOCIATED AREA NUMBERS

DISCIPLINES
- G GENERAL
- GX GENERAL (DISCIPLINE SPECIFIC)(X - DENOTES DISCIPLINE)
- D DEMOLITION
- C CIVIL
- S STRUCTURAL
- M PROCESS/MECHANICAL
- E ELECTRICAL
- N INSTRUMENTATION

GENERAL NOTES

1. THE NOTE IN THE TITLEBLOCK OF THIS DRAWING WHICH READS "TWO INCHES AT FULL SCALE" APPEARS ON DRAWINGS FOR IDENTIFICATION OF SCALE DISTORTIONS ON HALF SIZE DRAWINGS AND DRAWING REPRODUCTIONS. IT SHALL MEAN THAT THE DRAWING IS FULL SIZE AND THE DRAWING SCALES ACCURATE WHEN THE LENGTH OF THIS LINE IS TWO INCHES. IF THE LENGTH IS OTHER THAN TWO INCHES, DRAWING SCALES MUST BE ADJUSTED ACCORDINGLY.
2. EXISTING PIPING IS DESIGNATED BY SERVICE RATHER THAN MATERIAL TYPE. MATERIAL TYPES, IF KNOWN, APPEAR OUTSIDE THE PIPING CALLOUT BUBBLE, AND MAY NOT BE THE SAME MATERIAL TYPES SPECIFIED FOR NEW PIPING.
3. ABBREVIATIONS USED IN THIS CONTRACT DOCUMENT CONFORM TO ANSI Y1.1, UNLESS NOTED OTHERWISE ON DRAWINGS. SEE SPEC. SECTION 01071 FOR ADDITIONAL ABBREVIATIONS.
4. ALL STANDARD DETAILS APPLY TO ALL THE CONTRACTORS WORK WHETHER SPECIFICALLY REFERENCED OR NOT.
5. SEE FRONT END SHEETS FOR EACH DISCIPLINES STANDARD SYMBOLS, ETC.
6. SEE ADDITIONAL GENERAL NOTES THROUGHOUT DRAWING SET.

Brown AND Caldwell
SALT LAKE CITY, UT

CERTIFICATE NO. 36697 STEVEN BRENCHLEY Date Signed 1/31/2022 ARIZONA, U.S.A.

CONSTRUCTION ISSUE

NAVAJO TRIBAL UTILITY AUTHORITY · UTILITIES FOR THE NAVAJO NATION · NTUA

DILKON PASS PIPELINE AND PUMP STATION

REVISIONS

REV	DATE	DESCRIPTION

LINE IS 2 INCHES AT FULL SIZE

DESIGNED: C. WILLMORE
DRAWN: T.PRIDEMORE
CHECKED: C. WILLMORE
CHECKED: ----
APPROVED: S. BRENCHLEY
FILENAME G-002.dwg
BC PROJECT NUMBER 157520
CLIENT PROJECT NUMBER

GENERAL

STANDARD SYMBOLS

DRAWING NUMBER
G-002

SHEET NUMBER 3 OF 59

Path: C:\USERS\TPRIDEMORE\ONEDRIVE - BROWN AND CALDWELL\DOCUMENTS\WORK\TEMP_CAD\NAVAJO NATION\DILKON PASS\EXPORT FILENAME: G-002.DWG PLOT DATE: 2/23/2022 4:55 PM CAD USER: TYLER PRIDEMORE

A	AMPERE
AC	ASPHALTIC CONCRETE
A/C	AIR CONDITIONING
ACC	AREA CONTROL CENTER
ACP	ASBESTOS CEMENT PIPE
ACST	ACOUSTIC
ACU	AIR CONDITIONING UNIT
AF	AIR FILTER
AHU	AIR HANDLING UNIT
AMD	AIR MONITORING DEVICE
.ANC	ANCHOR
AR	AIR RETURN
ARV	AIR RELEASE VALVE
AS	AIR SUPPLY
ATP	VERTICAL TURBINE PUMP AIR RELEASE VALVE
ATS	AUTOMATIC TRANSFER SWITCH
AV	ANGLE VALVE
BAC	BACTERIOLOGICAL
BAV	BALL VALVE
BC	BEGINNING OF CURVE
BCR	BEGINNING OF CURVE RETURN
BCOP	BARE COPPER
BFP	BACK FLOW PREVENTER
BFV	BUTTERFLY VALVE
BGAT	BOOLEAN GATE
BF	BLIND FLANGE
BHP	BRAKE HORSEPOWER
BSN	BAR SCREEN
BUV	BUTTERFLY VALVE
CAB	DIRECT BURIAL CABLE
CAF	COMBUSTION AIR FAN
CAV	COMBO AIR VALVE
CC	COOLING COIL
C-C	CENTER TO CENTER
CCP	CONCRETE CYLINDER PIPE
CCSP	CONCRETE LINED AND COATED STEEL PIPE
CD	CEILING DIFFUSER
CDR	CONDUCTOR
CDU	CONDENSING UNIT
CED	CEILING EXHAUST DIFFUSER
CER	CEILING EXHAUST REGISTER
CF	CUBIC FEET
CFH	CUBIC FEET PER HOUR
CFR	CODE OF FEDERAL REGULATIONS
CHR	CHILLER
CIRC	CIRCUMFERENCE
CK	CHECKER(ED)
CKPL	CHECKER PLATE
C	CENTERLINE
CL	CLEARANCE
CL2	CHLORINE
CM	MANUAL CONTROL STATION
CMA	MANUAL-AUTO CONTROL STATION
CMC	CEMENT MORTAR COATED
CML	CEMENT MORTAR LINED
CMPA	ASBESTOS PROTECTED CORRUGATED METAL PIPE
CNTL	CONTROL
CO2	CARBON DIOXIDE
COD	CHEMICAL OXYGEN DEMAND
COF	COOLING AIR FAN
COM	COMMINUTOR
CON	CONVEYOR
COND	CONDUCTIVITY
CONN	CONNECTION
CJ	CONSTRUCTION JOINT
CONT	CONTINUED
CP	COMPRESSOR
CPVC	CHLORINATED POLYVINYL CHLORIDE
CR	CONDUIT RACK
CRF	CHEMICAL FEEDER
CRN	CRANE
CREJ	CORRUGATED RUBBER EXPANSION JOINT
CSD	CEILING SUPPLY DIFFUSER
CTF	CENTRIFUGE
CTR	CONTRACTOR, CONTROL UNIT
CV	CONTROL VALVE
DB	DUCT BANK
DE	DENSITY METER
DF	DRINKING FOUNTAIN
DFD	DUCT FIRE DAMPER
DG	DOOR GRILLE
DI	DUCTILE IRON
DM	DAMPER MOTOR
DR	DRAIN ROCK
DT	DRAIN TRAP
DU	DRIVE UNIT
DWF	DRY WEATHER FLOW
EA	EXHAUST AIR / ENVIRONMENTAL ASSESSMENT
EAT	ENTERING AIR TEMPERATURE
EAU	ENGINE ALTERNATOR UNIT
EC	END OF CURVE
ECU	EVAPORATIVE COOLING UNIT
ED	EXTRACTOR DAMPER, EQUIPMENT DRAIN
EE	EACH END
EF	EXHAUST FAN
EFF	EFFLUENT
EG	EXHAUST GRILLE
EJ	EXPANSION JOINT
EL	ELEVATION
ELL	ELBOW
EMBD	EMBEDDED
ENCL	ENCLOSURE
E/P	ELECTRIC/PNEUMATIC
EPR	EVAPORATOR
EQ	EQUAL
EQUIP	EQUIPMENT
ES	EXISTING SURFACE
EWEF	EACH WAY EACH FACE
EWT	ENTERING WATER TEMPERATURE
EXG	EXHAUST GRILLE
EXIST	EXISTING
F	FAHRENHEIT, FACE, FUSE(D), FAN
FAI	FRESH AIR INTAKE
FB	FLAT BAR, FLOOR BEAM
FC	FAIL CLOSED
FCL	FREE CHLORINE
FCR	FINE CRUSHED ROCK
FE	FLOWMETER
FF	FAR FACE / FINISHED FLOOR
F-F	FACE TO FACE
FH	FIRE HYDRANT, FLATHEAD
FIN	FINISHED
FIT	FLOW INDICATING TRANSMITTER
FL	FLOW LINE
FLC	FLOCCULATOR
FLP	FLUID POWER UNIT
FLR	FLOOR
FLT	FILTER
FM	FORCE MAIN , FLOW METER
FMH	FLEXIBLE METAL HOSE
FMX	FLASH MIXER
FO	FAIL OPEN
FP	FILTER PRESS
FPC	FLEXIBLE PIPE COUPLING
FPC-T	FPC TO TAKE TENSION
FRS	FREEZESTAT
FS	FLOW SWITCH, FIRESTAT
FT	FLASH TANK
G	POWER ACTUATED GATE
GAC	GRANULATING ACTIVATED CARBON
GB	GRADE BREAK
GBV	GLOBE VALVE
GDR	GRINDER
GEN	GENERATOR
GFI	GROUND FAULT INTERRUPTOR
GPD	GALLONS PER DAY
GRDR	GRINDER
GRT	GROUT
GSP	GALVANIZED STEEL PIPE
GT	GATE
GV	GATE VALVE
H/A	HAND AUTO
HC	HEATING COIL
HEX	HEAT EXCHANGER
HDOT	HEAVY DUTY OILTIGHT
HG	MERCURY, HAND GRADE
HHV	HEAT HOSE VALVE
HOA	HAND-OFF-AUTO
HOR	HORIZONTAL
HP	HIGH PRESSURE, HIGH POINT, HORSEPOWER
HR	HANDRAIL, HEAT RESERVOIR
HSS	HIGH SIGNAL SELECT
HTV	HIGH TEMPERATURE VENT
HV	HOSE VALVE
H/V	HEATING AND VENTILATING
HVAC	HEATING, VENTILATING AND AIR CONDITIONING
HWTR	HIGH WATER
HYDT	HYDRANT
ICN	INCINERATOR
IF	INSIDE FACE
IL	INDICATING LAMP
INF	INFLUENT
INS	INSULATE(D)(ION)
INTER	INTERMEDIATE
INT	INTERIOR
INV	INVERT
IT	INSTRUMENT TAP
JST	JOIST
K	KIP (1000 POUNDS)
KV	KILOVOLT
KVA	KILOVOLT AMPERE
KVAR	KILOVAR
KW	KILOWATT
LAT	LEAVING AIR TEMPERATURE, LATERAL, LATITUDE
LCP	LOCAL CONTROL PANEL
LE	LEVEL METER
LEL	LOWER EXPLOSIVE LIMIT
LGW	LOWER GREASEWOOD
LIT	LEVEL INDICATION TRANSMITTER
LOD	LIMITS OF DISTURBMENTS
LOS	LOCKOUT STOP
LS	LIMIT SWITCH
MBH	THOUSAND BTU'S PER HOUR
MCC	MOTOR CONTROL CENTER
MCM	THOUSAND CIRCULAR MILLS
MCU	MASTER CONTROL UNIT
MD	MOTORIZED DAMPER
MEE	MISCELLANEOUS ELECTRICAL EQUIPMENT
MGD	MILLION GALLONS PER DAY
MG/I	MILLIGRAMS PER LITER
MIE	MISCELLANEOUS INSTRUMENTATION EQUIPMENT
MILSPEC	MILITARY SPECIFICATION
MIN	MINIMUM, MINUTE
MJ	MECHANICAL JOINT
ML	MILLILITER
MME	MISCELLANEOUS MECHANICAL EQUIPMENT
MOP	MOTOR OPERATOR
MOV	MOTOR OPERATED VALVE
MUL/DIV	MULTIPLY/DIVIDE
MV	MUD VALVE, MILLIVOLT
MX	MIXER
N	NEUTRAL
NA	NONAUTOMATIC
NAOH	SODIUM HYDROXIDE
NEG	NEGATIVE
NC	NORMALLY CLOSED
NF	NONFUSED
NOX	NITRATES AND NITRITES
NPSH	NET POSITIVE SUCTION HEAD
NRS	NONRISING STEM
OA	OUTSIDE AIR, OVERALL
OAI	OUTSIDE AIR INTAKE
OB	OPPOSED BLADE
OL	OVERLOAD
O-O	OUT TO OUT
ORF	ODOR REMOVAL FILTER
ORP	OXIDATION REDUCTION POTENTIAL
ORT	ODOR REMOVAL TOWER
OSA	OUTSIDE AIR
OSC	ODOR SCRUBBER
P	PUMP
PAR	PARALLEL
PC	PLAIN CONCRETE, PIPE COUPLING
PCC	PLANT CONTROL CENTER
PCHV	PINCH VALVE
PCP	PLAIN CONCRETE PIPE
PC-T	PIPE COUPLING TO TAKE TENSION
PCU	PHOTOELECTRIC CONTROL UNIT
P/E	PNEUMATIC/ELECTRIC
PF	POWER FACTOR
PI	PROPORTIONAL PLUS INTEGRAL CONTROL , PRESSURE GAUGE
PID	PROPORTIONAL PLUS INTEGRAL PLUS DERIVATIVE CONTROL
PIT	PRESSURE INDICATING TRANSMITTER
PIVC	POINT OF INTERSECTION ON VERTICAL CURVE
PL	PROPERTY LINE, PIPELINE, PLATE
PLV	PLUG VALVE
PLYWD	PLYWOOD
PMP	PUMP
PNL	PANEL, PANELBOARD
PO4	PHOSPHATE
POP	PNEUMATIC OPERATOR
PP	POWER POLE
PRES	PRESSURE
PRD	PRESSURE RELIEF DAMPER
PRV	PRESSURE REGULATING (REDUCING) (RELIEF) VALVE
PRS	PRESSURE REDUCING STATION
PS	PRESSURE SWITCH, PRESSURE SENSOR , PUMP STATION
PSIA	POUND PER SQUARE INCH ABSOLUTE
PSIG	POUNDS PER SQUARE INCH GAGE
PV	PLUG VALVE, PROCESS VARIABLE
PVL	PRESSURE VESSEL
PVT	PAVEMENT
Q	RATE OF FLOW
QCPLG	QUICK COUPLING
R	RADIUS
RA	RETURN AIR
RAF	ROLL TYPE AIR FILTER
RCR	RECORDER
REC	RECEIVER
RECD	RECEIVED
RECP	RECEPTACLE
RED	REDUCE(R)
REG	REGULATOR
REL	RELAY
RT	RIGHT
RTP	REINFORCED THERMOSET PLASTIC
RTU	REMOTE TERMINAL UNIT
RGS	RIGID GALVANIZED STEEL
RL	REDUCED LEVEL
RW	RECLAIMED WATER
RWCD	RECLAIMED WATER CONSERVATION DISTRICT
RWL	RAINWATER LEADER
S	SOUTH, SILENCER
SB	SIGNAL BOX
SBD	SWITCHBOARD
SCR	SCRUBBER
SD	SPLITTER DAMPER, SMOKE DETECTOR
SEP	SEPARATOR
SG	SUPPLY GRILLE, SLUICE GATE
SI	SPEED INCREASER
SIM	SIMILAR
SL	SLOPE
SLG	SLIDE GATE
SLR	SILENCER
SN	SCREEN
SP	SPACE, SET POINT, STATIC PRESSURE
SPG	SPACING
SPT	SOUND POWERED TELEPHONE
SO2	SULFUR DIOXIDE
SPL	SPLICE
SR	SPEED REDUCER, SALT RIVER PROJECT
SRV	SAFETY RELIEF VALVE
SRG	SPLIT-RANGING
SS	STAINLESS STEEL, SANITARY SEWER, SPEED SELECTOR
SSC	SOLID STATE CONTROLLER
SSFH	STAINLESS STEEL FLAT HEAD
SSK	SERVICE SINK
ST	START
STD	STANDARD
STGA	STARTING AIR
SUB	SUBSTITUTE
SUP	SUMP PUMP
SV	SOLENOID VALVE
SWB	SWITCHBOARD
SWGR	SWITCHGEAR
SYM	SYMMETRICAL
TP	TANGENT POINT
TB	TERMINAL BOX
T/B	TOP OF BANK
TBN	TURBINE
T/C	TOP OF CURB
TCL	TOTALLY CLOSED
TCP	TEMPERATURE CONTROL PANEL
TD	TIME DELAY RELAY
TFR	TRANSFORMER
TNK	TANK
TOA	TEST-OFF-AUTO
TOC	TOTAL ORGANIC CARBON
TPG	TOPPING
TPLX	TRIPLEXED
TR	TIMING RELAY, STAIR TREAD
TRM	TRANSMITTER
TRN	TRANSDUCER
TRS	TRANSFER SWITCH
TS	TEMPERATURE SWITCH
TV	THERMOSTATIC VALVE
UG	UNDERGROUND
UL	ULTIMATE LOAD
UN	UNION
UP	UTILITY POLE
UPS	UNINTERRUPTIBLE POWER SUPPLY
US	UTILITY STATION
USS	UNIT SUBSTATION
V	VALVE, VOLTS
VAC	VOLTS ALTERNATING CURRENT
VAR	VARIES, VARIABLE
VC	VERTICAL CURVE
VCP	VITRIFIED CLAY PIPE
VD	VOLUME DAMPER
VDC	VOLTS DIRECT CURRENT
VEN	VENTILATOR
VFD	VARIABLE FREQUENCY DRIVE
VFT	VACUUM FILTER
VP	VAPOR PRESSURE, VACUUM PUMP
VSC	VARIABLE SPEED COUPLING
VTR	VENT THROUGH ROOF
VV	VARIABLE VOLUME BOX
WC	WATER CLOSET, WATER COLUMN
WCO	WALL CLEANOUT
WEG	WALL EXHAUST GRILLE
WER	WALL EXHAUST REGISTER
WF	WIDE FLANGE
WG	WASTE GAS
WM	WATER METER
WSR	WALL SUPPLY REGISTER, WASHER
WSTP	WATERSTOP
WT	WATERTIGHT
WTP	WATER TREATMENT PLANT
WV	WATER VALVE
WWF	WELDED WIRE FABRIC, WET WEATHER FLOW
X	SPARE CONDUIT
XLP	CROSS LINKED POLYETHYLENE
XP	EXPLOSION-PROOF
YCO	YARD CLEANOUT
ZS	POSITION SWITCH

NOTES:
1. ADDITIONAL ABBREVIATIONS ARE DEFINED IN ANSI Y1.1-1972.
2. ABBREVIATIONS FOR PIPING SYSTEMS ARE SPECIFIED IN SECTION 15050.

Brown AND Caldwell

SALT LAKE CITY, UT

CERTIFICATE NO. 36697 STEVEN BRENCHLEY Date Signed 3/3/2022 ARIZONA, U.S.A.

CONSTRUCTION ISSUE

NAVAJO TRIBAL UTILITY AUTHORITY NTUA UTILITIES FOR THE NAVAJO NATION

DILKON PASS PIPELINE AND PUMP STATION

REVISIONS

REV	DATE	DESCRIPTION

LINE IS 2 INCHES AT FULL SIZE

DESIGNED: C. WILLMORE
DRAWN: T. PRIDEMORE
CHECKED: C. WILLMORE
CHECKED: - -
APPROVED: S. BRENCHLEY

FILENAME
G-003.dwg

BC PROJECT NUMBER
157520

CLIENT PROJECT NUMBER

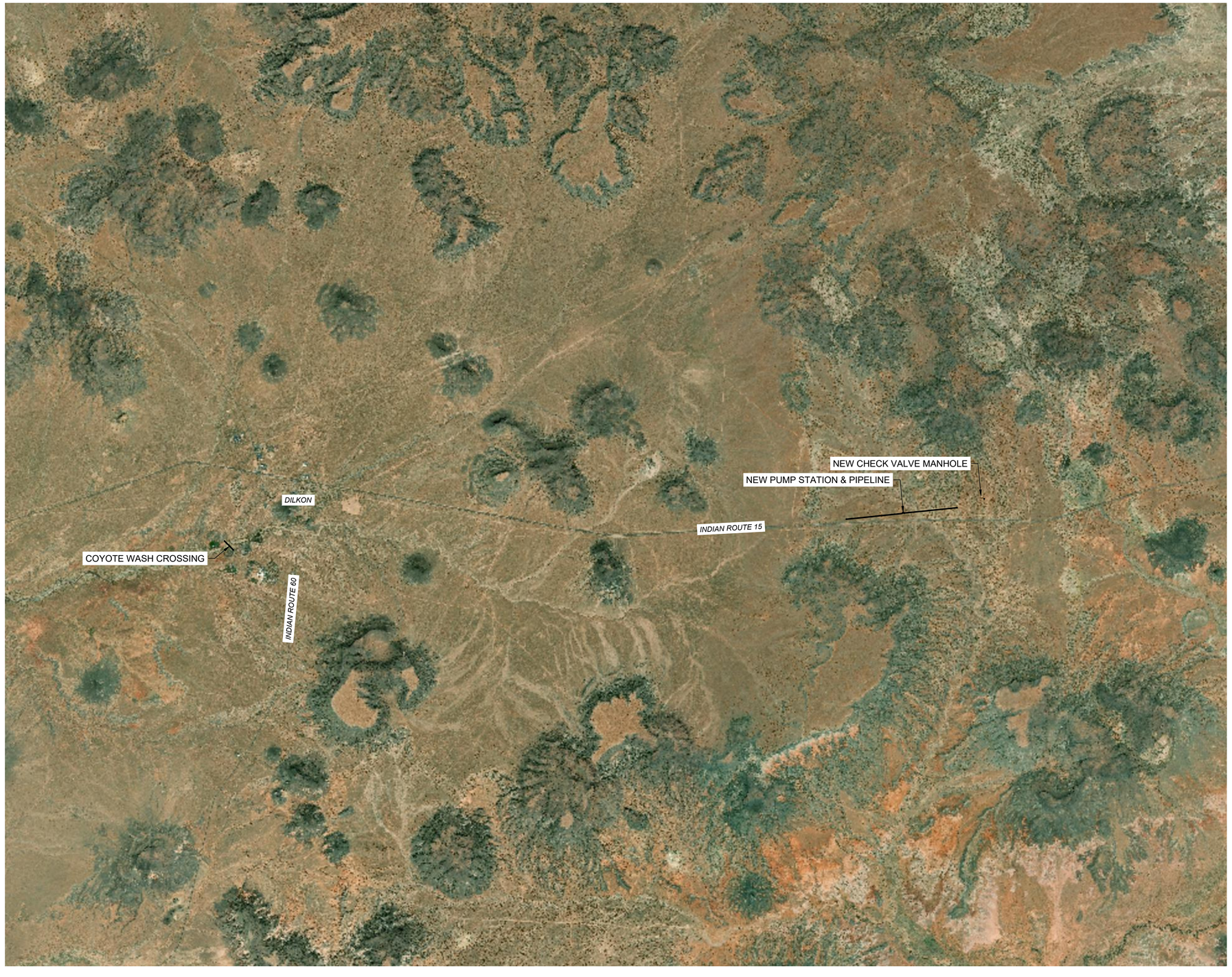
GENERAL

STANDARD ABBREVIATIONS

DRAWING NUMBER
G-003

SHEET NUMBER 4 OF 59

Path: C:\USERS\TPRIDEMORE\ONEDRIVE - BROWN AND CALDWELL\DOCUMENTS\WORKTEMP. CAD\NAVAJO NATION\DILKON PASS\EXPORT FILENAME: G-003.DWG PLOT DATE: 2/23/2022 4:55 PM CAD USER: TYLER PRIDEMORE



PLAN NORTH

Call at least two full working days before you begin excavation.

ARIZONA 811 Arizona Blue Stake, Inc.

Dial 8-1-1 or 1-800-STAKE-IT (782-5348)
In Maricopa County: (602) 263-1100

Brown AND Caldwell

SALT LAKE CITY, UT

CERTIFICATE NO. 36697 STEVEN BRENCHLEY Date Signed 1/31/2022 ARIZONA, U.S.A.

CONSTRUCTION ISSUE

NAVAJO TRIBAL UTILITY AUTHORITY · UTILITIES FOR THE NAVAJO NATION · NTUA

DILKON PASS PIPELINE AND PUMP STATION

REVISIONS

REV	DATE	DESCRIPTION

LINE IS 2 INCHES AT FULL SIZE

DESIGNED:	C. WILLMORE
DRAWN:	T. PRIDEMORE
CHECKED:	C. WILLMORE
CHECKED:	- -
APPROVED:	S. BRENCHLEY

FILENAME
G-004.dwg

BC PROJECT NUMBER
157520

CLIENT PROJECT NUMBER

GENERAL

VICINITY MAP

DRAWING NUMBER
G-004

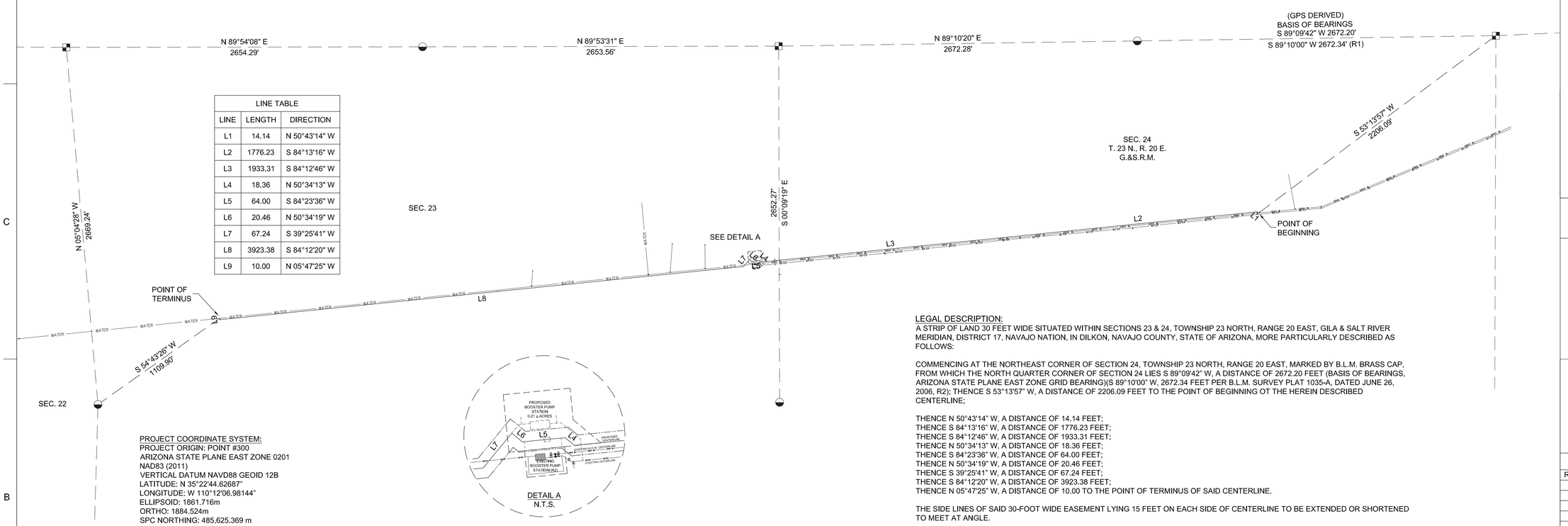
SHEET NUMBER 5 OF 59

Path: C:\USERS\TPRIDEMORE\ONEDRIVE - BROWN AND CALDWELL\DOCUMENTS\WORK\TEMP. CAD\NAVAJO NATION\DILKON PASS\EXPORT FILENAME: G-004.DWG PLOT DATE: 2/23/2022 4:55 PM CAD USER: TYLER PRIDEMORE

RESULTS OF SURVEY

DILKON PASS WATER SYSTEM
PROPOSED WATERLINE
5.39 ± ACRE
LOCATED IN SECTIONS 23 & 24
T. 23 N., R. 20 E., G.&S.R.M.
DILKON, NAVAJO COUNTY, ARIZONA
DILKON CHAPTER, DISTRICT 17, NAVAJO NATION

SCALE: 1" = 400'
0 200 400 800



DETAIL A
N.T.S.

LINE TABLE		
LINE	LENGTH	DIRECTION
L1	14.14	N 50°43'14" W
L2	1776.23	S 84°13'16" W
L3	1933.31	S 84°12'46" W
L4	18.36	N 50°34'13" W
L5	64.00	S 84°23'36" W
L6	20.46	N 50°34'19" W
L7	67.24	S 39°25'41" W
L8	3923.38	S 84°12'20" W
L9	10.00	N 05°47'25" W

PROJECT COORDINATE SYSTEM:
PROJECT ORIGIN: POINT #300
ARIZONA STATE PLANE EAST ZONE 0201
NAD83 (2011)
VERTICAL DATUM NAVD88 GEOID 12B
LATITUDE: N 35°22'44.62687"
LONGITUDE: W 110°12'06.98144"
ELLIPSOID: 1861.716m
ORTHO: 1884.524m
SPC NORTHING: 485,625.369 m
SPC EASTING: 210,155.267 m
COMBINED SCALE FACTOR: 0.9960803

MODIFIED TO GROUND COORDINATES (INTERNATIONAL FEET)
PROJECT PRIMARY POINT #300
MODIFIED NORTHING: 1,593,883.84 FT.
MODIFIED EASTING: 689,756.15 FT.
OORTHO: 6182.823 FT.

REFERENCES:
(R1) BUREAU OF LAND MANAGEMENT SURVEY PLAT 1305-A, DATED JUNE 26,2006.
(R2) AS-BUILT RIGHT-OF-WAY MAP OF WATER SYSTEM & INDIVIDUAL WASTE DISPOSAL FACILITIES, PROJECT NO. NA-78-206, OFFICE OF ENVIRONMENTAL HEALTH & ENGINEERING, INDIAN HEALTH SERVICE, DATED APRIL 10, 1980.
(R3) STATE PLANE COORDINATES PER NATIONAL GEODETIC SURVEY, O.P.U.S. PROCESSED GPS DATA.

BASIS OF BEARINGS:
THE NORTH SECTION LINE OF SECTION 24, T. 23 N., R. 20 E., WITH A GRID BEARING OF S 89°09'42" W AND A B.L.M. BEARING OF S 89°10'00" W PER B.L.M. PLAT 1305-A. THE ARIZONA STATE PLANE COORDINATE EAST ZONE 0201 GRID BEARING DERIVED FROM GPS OBSERVATIONS AND NATIONAL GEODETIC SURVEY OPUS REPORTS.

SURVEYOR'S NOTE:
1. THE LOCATION OF THE BOUNDARY OF THIS TRACT WAS DETERMINED BY THE LOCATION OF THE EXISTING WATER SYSTEM STRUCTURES. THE PREVIOUS SURVEY DID NOT MATCH THE EXISTING WATER SYSTEM. THIS SURVEY MAKES NO STATEMENT REGARDING RIGHTS TO THIS TRACT OR PRIOR RIGHTS WHICH MAY HAVE EXISTED PRIOR TO THIS SURVEY.

CERTIFICATION:
THIS IS TO CERTIFY THAT THE SURVEY AND SUBDIVISION OF THE PREMISES DESCRIBED AND PLATTED HEREON WERE MADE UNDER MY DIRECTION DURING THE MONTH OF NOVEMBER OF 2021; THAT THE SURVEY IS TRUE AND COMPLETE AS SHOWN; THAT MONUMENTS SHOWN ACTUALLY EXIST OR WILL BE SET AS SHOWN; THAT THEIR POSITIONS ARE CORRECTLY SHOWN, AND THAT SAID MONUMENTS ARE SUFFICIENT TO ENABLE THE SURVEY TO BE RETRACED.

HALBERT O. GOLDTOOTH, AZ RLS 42048

LEGAL DESCRIPTION:
A STRIP OF LAND 30 FEET WIDE SITUATED WITHIN SECTIONS 23 & 24, TOWNSHIP 23 NORTH, RANGE 20 EAST, GILA & SALT RIVER MERIDIAN, DISTRICT 17, NAVAJO NATION, IN DILKON, NAVAJO COUNTY, STATE OF ARIZONA, MORE PARTICULARLY DESCRIBED AS FOLLOWS:

COMMENCING AT THE NORTHEAST CORNER OF SECTION 24, TOWNSHIP 23 NORTH, RANGE 20 EAST, MARKED BY B.L.M. BRASS CAP, FROM WHICH THE NORTH QUARTER CORNER OF SECTION 24 LIES S 89°09'42" W, A DISTANCE OF 2672.20 FEET (BASIS OF BEARINGS, ARIZONA STATE PLANE EAST ZONE GRID BEARING)(S 89°10'00" W, 2672.34 FEET PER B.L.M. SURVEY PLAT 1035-A, DATED JUNE 26, 2006, R2); THENCE S 53°13'57" W, A DISTANCE OF 2206.09 FEET TO THE POINT OF BEGINNING OT THE HEREIN DESCRIBED CENTERLINE;

THENCE N 50°43'14" W, A DISTANCE OF 14.14 FEET;
THENCE S 84°13'16" W, A DISTANCE OF 1776.23 FEET;
THENCE S 84°12'46" W, A DISTANCE OF 1933.31 FEET;
THENCE N 50°34'13" W, A DISTANCE OF 18.36 FEET;
THENCE S 84°23'36" W, A DISTANCE OF 64.00 FEET;
THENCE N 50°34'19" W, A DISTANCE OF 20.46 FEET;
THENCE S 39°25'41" W, A DISTANCE OF 67.24 FEET;
THENCE S 84°12'20" W, A DISTANCE OF 3923.38 FEET;
THENCE N 05°47'25" W, A DISTANCE OF 10.00 TO THE POINT OF TERMINUS OF SAID CENTERLINE.

THE SIDE LINES OF SAID 30-FOOT WIDE EASEMENT LYING 15 FEET ON EACH SIDE OF CENTERLINE TO BE EXTENDED OR SHORTENED TO MEET AT ANGLE.

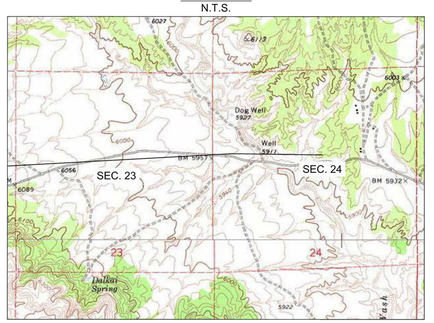
SAID PARCEL BEING 5.39 ACRES MORE OR LESS AND BEING SUBJECT TO ANY AND ALL EXISTING EASMENTS FOR UTILITIES LOCATED THEREIN.

EXHIBIT "A"

LEGEND:
- FOUND 3" BRASS CAP, B.L.M. SECTION CORNER
- FOUND 3" BRASS CAP, B.L.M. 1/4 CORNER
- SET 5/8" REBAR W/ PLASTIC CAP STAMPED "GPS RLS 42048"
- CALCULATED POINT, NOTHING FOUND OR SET

CONTROL MONUMENTS:
POB: LAT 35°32'58.19948" N; LONG 109°49'25.43144" W
SECTION CORNER: LAT 35°23'14.30128" N; LONG 110°09'38.62143" W
1/4 CORNER: LAT 35°23'13.91510" N; LONG 110°10'10.88103" W

VICINITY MAP
N.T.S.



Brown AND Caldwell
SALT LAKE CITY, UT

REGISTERED LAND SURVEYOR
CERTIFICATE NO.
42048
HALBERT O. GOLDTOOTH
DATE SIGNED
3-2-22
ARIZONA, U.S.A.

CONSTRUCTION ISSUE

NAVAJO TRIBAL UTILITY AUTHORITY
UTILITIES FOR THE NAVAJO NATION

DILKON PASS PIPELINE AND PUMP STATION

REVISIONS

REV	DATE	DESCRIPTION

LINE IS 2 INCHES AT FULL SIZE

DESIGNED:
DRAWN: H.GOLDTOOTH
CHECKED: H.GOLDTOOTH
CHECKED:
APPROVED: H.GOLDTOOTH
FILENAME
BC PROJECT NUMBER 157520
CLIENT PROJECT NUMBER 00357.21

RESUTS OF SURVEY

DRAWING NUMBER
V-001

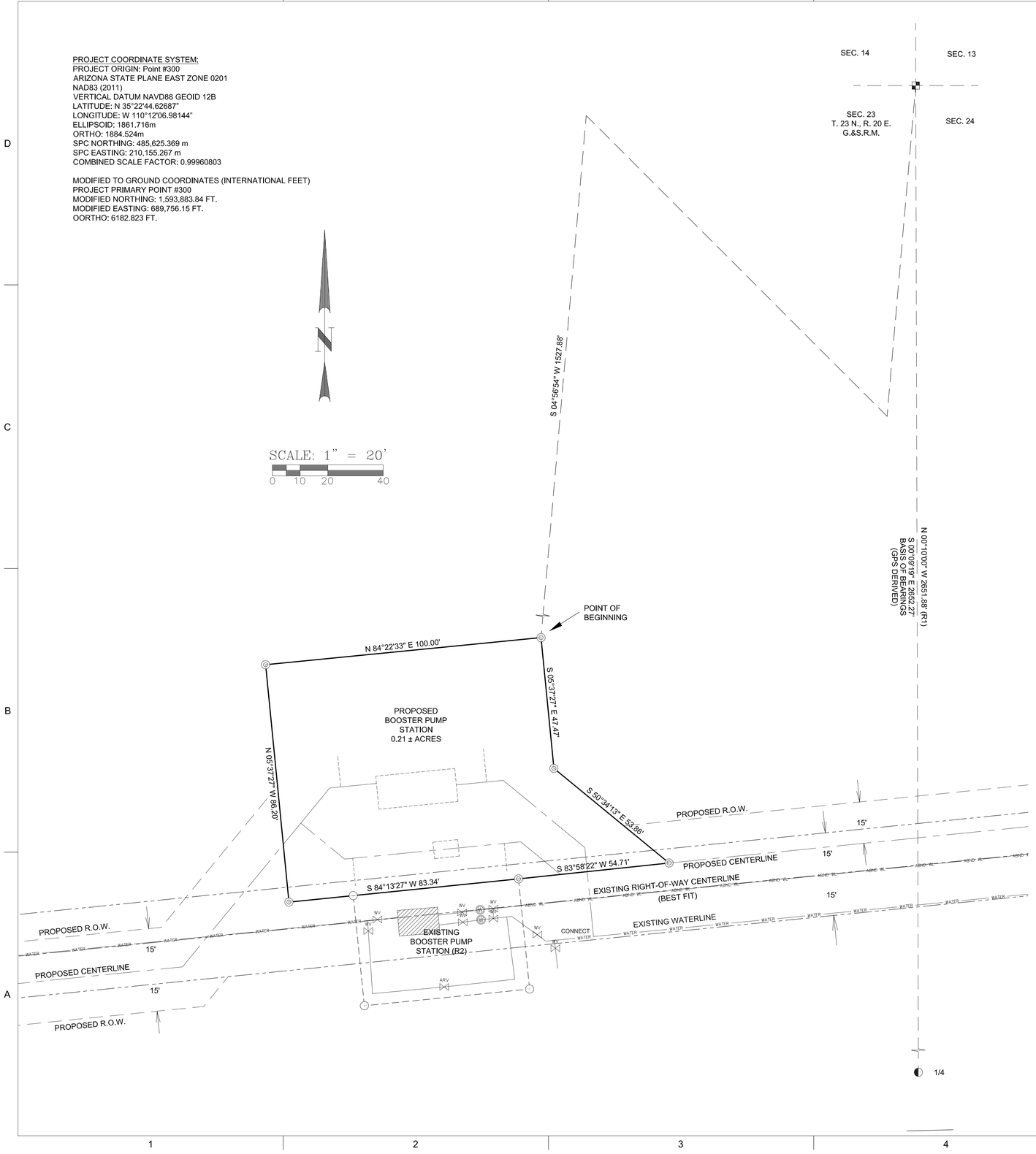
SHEET NUMBER 6 OF 59

Path: E:\21533 DILKON PASS WL\DWG FILENAME: DILKON PASS WATERLINE.DWG PLOT DATE: 3/2/2022 3:46 PM CAD USER: HALBERT GOLDTOOTH

PROJECT COORDINATE SYSTEM:
PROJECT ORIGIN: Point #300
ARIZONA STATE PLANE EAST ZONE 0201
NAD83 (2011)
VERTICAL DATUM NAVD88 GEOID 12B
LATITUDE: N 35°22'44.62687"
LONGITUDE: W 110°12'06.98144"
ELLIPSOID: 1861.716m
ORTHO: 1884.524m
SPC NORTHING: 485,625.369 m
SPC EASTING: 210,155.267 m
COMBINED SCALE FACTOR: 0.99960803

MODIFIED TO GROUND COORDINATES (INTERNATIONAL FEET)
PROJECT PRIMARY POINT #300
MODIFIED NORTHING: 1,593,883.84 FT.
MODIFIED EASTING: 689,756.15 FT.
OORTHO: 6182.823 FT.

SCALE: 1" = 20'
0 10 20 40



RESULTS OF SURVEY

DILKON PASS WATER SYSTEM
BOOSTER PUMP STATION TRACT
0.21 ± ACRE
LOCATED IN SECTION 23
T. 23 N., R. 20 E., G.&S.R.M.
DILKON, NAVAJO COUNTY, ARIZONA
DILKON CHAPTER, DISTRICT 17, NAVAJO NATION

LEGAL DESCRIPTION:
A PARCEL OF LAND SITUATED WITHIN SECTION 23, TOWNSHIP 23 NORTH, RANGE 20 EAST, GILA & SALT RIVER MERIDIAN, DISTRICT 17, NAVAJO NATION, IN DILKON, NAVAJO COUNTY, STATE OF ARIZONA, MORE PARTICULARLY DESCRIBED AS FOLLOWS:

COMMENCING AT THE NORTHEAST CORNER OF SECTION 23 MARKED BY A B.L.M. BRASS CAP, FROM WHICH THE EAST QUARTER CORNER OF SECTION 23 LIES S 00°09'19" E, A DISTANCE OF 2652.27 FEET (BASIS OF BEARINGS, ARIZONA STATE PLANE EAST ZONE GRID BEARING)(N 00°10'00" W, 2651.88 FEET PER B.L.M. SURVEY PLAT 1035-A, DATED JUNE 26, 2006, R1); THENCE S 04°56'54" W, A DISTANCE OF 1527.88 FEET TO A 5/8" REBAR WITH PLASTIC CAP STAMPED "GPS RLS 42048"; SAID POINT BEING THE POINT OF BEGINNING OF THE HEREIN DESCRIBED PARCEL OF LAND;

THENCE S 05°37'27" E, A DISTANCE OF 47.47 FEET TO A 5/8" REBAR WITH PLASTIC CAP STAMPED "GPS RLS 42028";
THENCE S 50°34'13" E, A DISTANCE OF 53.86 FEET TO A 5/8" REBAR WITH PLASTIC CAP STAMPED "GPS RLS 42028";
THENCE S 83°58'22" W, A DISTANCE OF 54.71 FEET TO A 5/8" REBAR WITH PLASTIC CAP STAMPED "GPS RLS 42028";
THENCE S 84°13'27" W, A DISTANCE OF 83.34 FEET TO A 5/8" REBAR WITH PLASTIC CAP STAMPED "GPS RLS 42028";
THENCE N 05°37'27" W, A DISTANCE OF 86.20 FEET TO A 5/8" REBAR WITH PLASTIC CAP STAMPED "GPS RLS 42028";
THENCE N 84°22'33" E, A DISTANCE OF 100.00 FEET TO THE POINT OF BEGINNING.

SAID PARCEL BEING 0.21 ACRES MORE OR LESS BEING SUBJECT TO ANY EXISTING EASMENTS FOR UTILITIES LOCATED THEREIN.

EXHIBIT "A"

LEGEND:
- ◪ - FOUND 3" BRASS CAP, B.L.M. SECTION CORNER
- ◐ - FOUND 3" BRASS CAP, B.L.M. 1/4 CORNER
- ◎ - SET 5/8" REBAR W/ PLASTIC CAP STAMPED "GPS RLS 42048"
- ○ - CALCULATED POINT, NOTHING FOUND OR SET

CONTROL MONUMENTS:
POB: LAT 35°22'58.48126" N; LONG 110°10'44.73058" W
SECTION CORNER: LAT 35°23'13.53143" N; LONG 110°10'43.14167" W
1/4 CORNER: LAT 35°22'47.30809" N; LONG 110°10'43.05096" W

REFERENCES:
(R1) BUREAU OF LAND MANAGEMENT SURVEY PLAT 1305-A, DATED JUNE 26,2006.
(R2) AS-BUILT RIGHT-OF-WAY MAP OF WATER SYSTEM & INDIVIDUAL WASTE DISPOSAL FACILITIES, PROJECT NO. NA-78-206, OFFICE OF ENVIRONMENTAL HEALTH & ENGINEERING, INDIAN HEALTH SERVICE, DATED APRIL 10, 1980.
(R3) STATE PLANE COORDINATES PER NATIONAL GEODETIC SURVEY, O.P.U.S. PROCESSED GPS DATA.

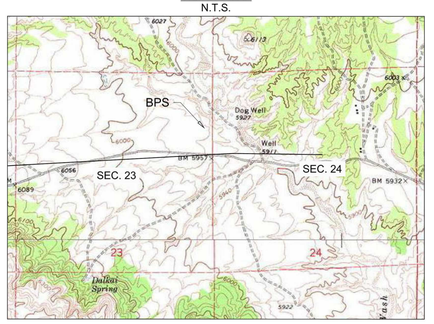
BASIS OF BEARINGS:
THE EAST SECTION LINE OF SECTION 23, T. 23 N., R. 20 E., WITH A GPS DERIVED BEARING OF S 00°09'19" E AND A B.L.M. BEARING OF N 00°10'00" W PER B.L.M. PLAT 1305-A. THE ARIZONA STATE PLANE COORDINATE EAST ZONE 0201 GRID BEARING DERIVED FROM GPS OBSERVATIONS AND NATIONAL GEODETIC SURVEY OPUS REPORTS.

SURVEYOR'S NOTE:
1. THE LOCATION OF THE BOUNDARY OF THIS TRACT WAS DETERMINED BY THE LOCATION OF THE EXISTING WATER SYSTEM STRUCTURES. THE PREVIOUS SURVEY DID NOT MATCH THE EXISTING WATER SYSTEM. THIS SURVEY MAKES NO STATEMENT REGARDING RIGHTS TO THIS TRACT OR PRIOR RIGHTS WHICH MAY HAVE EXISTED PRIOR TO THIS SURVEY.

CERTIFICATION:
THIS IS TO CERTIFY THAT THE SURVEY AND SUBDIVISION OF THE PREMISES DESCRIBED AND PLATTED HEREON WERE MADE UNDER MY DIRECTION DURING THE MONTH OF NOVEMBER OF 2021; THAT THE SURVEY IS TRUE AND COMPLETE AS SHOWN; THAT MONUMENTS SHOWN ACTUALLY EXIST OR WILL BE SET AS SHOWN; THAT THEIR POSITIONS ARE CORRECTLY SHOWN, AND THAT SAID MONUMENTS ARE SUFFICIENT TO ENABLE THE SURVEY TO BE RETRACED.

HALBERT O. GOLDTOOTH, AZ RLS 42048

VICINITY MAP
N.T.S.



Brown AND Caldwell
SALT LAKE CITY, UT

REGISTERED LAND SURVEYOR
CERTIFICATE NO.
42048
HALBERT O. GOLDTOOTH
DATE SIGNED
3-2-22
ARIZONA U.S.A.

CONSTRUCTION ISSUE

NAVAJO TRIBAL UTILITY AUTHORITY
UTILITIES FOR THE NAVAJO NATION

DILKON PASS PIPELINE AND PUMP STATION

REVISIONS

REV	DATE	DESCRIPTION

LINE IS 2 INCHES AT FULL SIZE

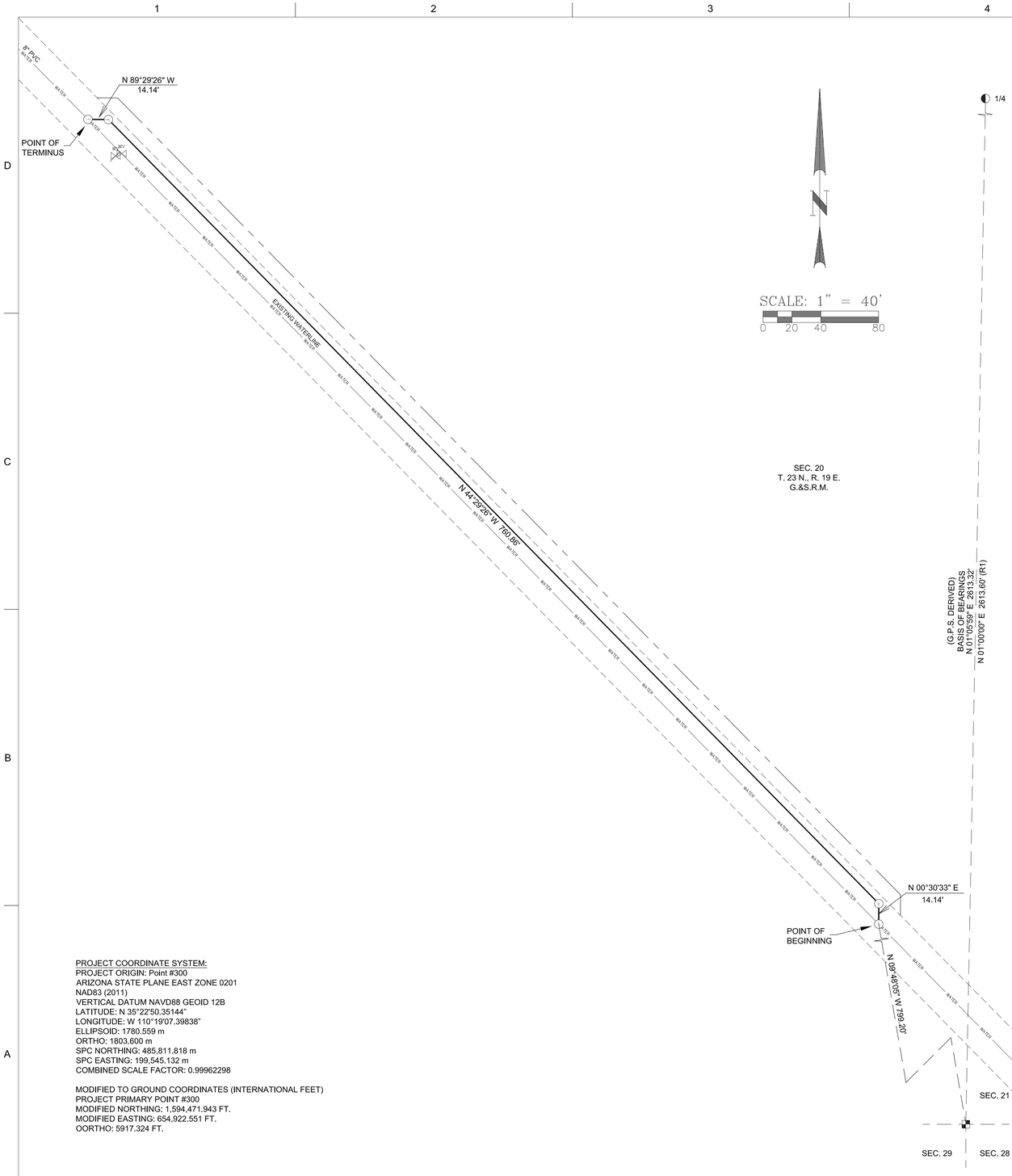
DESIGNED:
DRAWN: H.GOLDTOOTH
CHECKED: H.GOLDTOOTH
CHECKED:
APPROVED: H.GOLDTOOTH
FILENAME
BC PROJECT NUMBER 157520
CLIENT PROJECT NUMBER 00357.21

RESUTS OF SURVEY

DRAWING NUMBER
V-002

SHEET NUMBER 7 OF 59

Path: E:\21533 DILKON PASS WL\DWG FILENAME: DILKON BPS TRACT.DWG PLOT DATE: 3/2/2022 3:48 PM CAD USER: HALBERT GOLDTOOTH



PROJECT COORDINATE SYSTEM:
PROJECT ORIGIN: Point #300
ARIZONA STATE PLANE EAST ZONE 0201
NAD83 (2011)
VERTICAL DATUM NAVD88 GEOID 12B
LATITUDE: N 35°22'50.35144"
LONGITUDE: W 110°19'07.39838"
ELLIPSOID: 1780.559 m
ORTHO: 1803.600 m
SPC NORTHING: 485,811.818 m
SPC EASTING: 199,545.132 m
COMBINED SCALE FACTOR: 0.99962298

MODIFIED TO GROUND COORDINATES (INTERNATIONAL FEET)
PROJECT PRIMARY POINT #300
MODIFIED NORTHING: 1,594,471.943 FT.
MODIFIED EASTING: 654,922.551 FT.
OORTHO: 5917.324 FT.

RESULTS OF SURVEY

DILKON PASS WATER SYSTEM
DILKON WASH CROSSING
0.54 ± ACRE
LOCATED IN SECTION 20
T. 23 N., R. 19 E., G.&S.R.M.
DILKON, NAVAJO COUNTY, ARIZONA
DILKON CHAPTER, DISTRICT 17, NAVAJO NATION

LEGAL DESCRIPTION:
A STRIP OF LAND 30 FEET WIDE SITUATED WITHIN SECTION 20, TOWNSHIP 23 NORTH, RANGE 19 EAST, GILA & SALT RIVER MERIDIAN, DISTRICT 17, NAVAJO NATION, IN DILKON, NAVAJO COUNTY, STATE OF ARIZONA, MORE PARTICULARLY DESCRIBED AS FOLLOWS:

COMMENCING AT THE SOUTHEAST CORNER OF SECTION 20, TOWNSHIP 23 NORTH, RANGE 20 EAST, MARKED BY B.L.M. BRASS CAP, FROM WHICH THE NORTH QUARTER CORNER OF SECTION 24 LIES N 01°05'59" W, A DISTANCE OF 2613.32 FEET (BASIS OF BEARINGS, ARIZONA STATE PLANE EAST ZONE GRID BEARING)(N 01°00'00" E, 2613.60 FEET PER B.L.M. SURVEY PLAT 1035-B, DATED JULY 20, 2005, R2); THENCE N 09°48'05" W, A DISTANCE OF 799.20 FEET TO THE POINT OF BEGINNING OT THE HEREIN DESCRIBED CENTERLINE;

THENCE N 00°30'33" E, A DISTANCE OF 14.14 FEET;
THENCE N 44°29'26" W, A DISTANCE OF 760.86 FEET;
THENCE N 89°29'26" W, A DISTANCE OF 14.14 TO THE POINT OF TERMINUS OF SAID CENTERLINE.

THE SIDE LINES OF SAID 30-FOOT WIDE EASEMENT LYING 15 FEET ON EACH SIDE OF CENTERLINE TO BE EXTENDED OR SHORTENED TO MEET AT ANGLE.

SAID PARCEL BEING 0.54 ACRES MORE OR LESS AND BEING SUBJECT TO ANY AND ALL EXISTING EASMENTS FOR UTILITIES LOCATED THEREIN.

EXHIBIT "A"

LEGEND:
- ■ - FOUND 3" BRASS CAP, B.L.M. SECTION CORNER
- ◐ - FOUND 3" BRASS CAP, B.L.M. 1/4 CORNER
- ◎ - SET 5/8" REBAR W/ PLASTIC CAP STAMPED "GPS RLS 42048"
- ○ - CALCULATED POINT, NOTHING FOUND OR SET

CONTROL MONUMENTS:
POB: LAT 35°22'32.11158" N; LONG 110°20'10.67172" W
SE CORNER SECTION 20: LAT 35°22'24.10995" N; LONG 110°20'08.75160" W
E 1/4 CORNER SECTION 20: LAT 35°22'49.94473" N; LONG 110°20'08.19994" W

REFERENCES:
(R1) BUREAU OF LAND MANAGEMENT SURVEY PLAT 1305-B, DATED JULY 20, 2005.
(R2) AS-BUILT RIGHT-OF-WAY MAP OF WATER SYSTEM & INDIVIDUAL WASTE DISPOSAL FACILITIES, PROJECT NO. NA-78-206, OFFICE OF ENVIRONMENTAL HEALTH & ENGINEERING, INDIAN HEALTH SERVICE, DATED APRIL 10, 1980.
(R3) STATE PLANE COORDINATES PER NATIONAL GEODETIC SURVEY, O.P.U.S. PROCESSED GPS DATA.

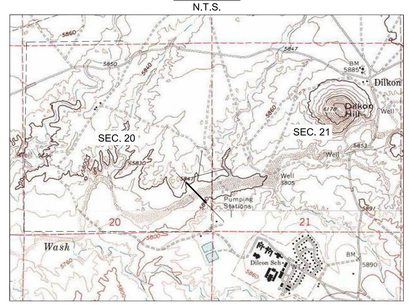
BASIS OF BEARINGS:
THE EAST SECTION LINE OF SECTION 20, T. 23 N., R. 19 E., WITH A GPS DERIVED BEARING OF N 01°05'59" E AND A B.L.M. BEARING OF N 01°00'00" E PER B.L.M. PLAT 1305-B. THE ARIZONA STATE PLANE COORDINATE EAST ZONE 0201 GRID BEARING DERIVED FROM GPS OBSERVATIONS AND NATIONAL GEODETIC SURVEY OPUS REPORTS.

SURVEYOR'S NOTE:
1. THE LOCATION OF THE BOUNDARY OF THIS TRACT WAS DETERMINED BY THE LOCATION OF THE EXISTING WATER SYSTEM STRUCTURES. THE PREVIOUS SURVEY DID NOT MATCH THE EXISTING WATER SYSTEM. THIS SURVEY MAKES NO STATEMENT REGARDING RIGHTS TO THIS TRACT OR PRIOR RIGHTS WHICH MAY HAVE EXISTED PRIOR TO THIS SURVEY.

CERTIFICATION:
THIS IS TO CERTIFY THAT THE SURVEY AND SUBDIVISION OF THE PREMISES DESCRIBED AND PLATTED HEREON WERE MADE UNDER MY DIRECTION DURING THE MONTH OF NOVEMBER OF 2021; THAT THE SURVEY IS TRUE AND COMPLETE AS SHOWN; THAT MONUMENTS SHOWN ACTUALLY EXIST OR WILL BE SET AS SHOWN; THAT THEIR POSITIONS ARE CORRECTLY SHOWN, AND THAT SAID MONUMENTS ARE SUFFICIENT TO ENABLE THE SURVEY TO BE RETRACED.

HALBERT O. GOLDTOOTH, AZ RLS 42048

VICINITY MAP
N.T.S.



Brown AND Caldwell
SALT LAKE CITY, UT

REGISTERED LAND SURVEYOR
CERTIFICATE NO.
42048
HALBERT O. GOLDTOOTH
9-2-22
DATE SIGNED
ARIZONA, U.S.A.

CONSTRUCTION ISSUE

NAVAJO TRIBAL UTILITY AUTHORITY
UTILITIES FOR THE NAVAJO NATION

DILKON PASS PIPELINE AND PUMP STATION

REVISIONS

REV	DATE	DESCRIPTION

LINE IS 2 INCHES AT FULL SIZE

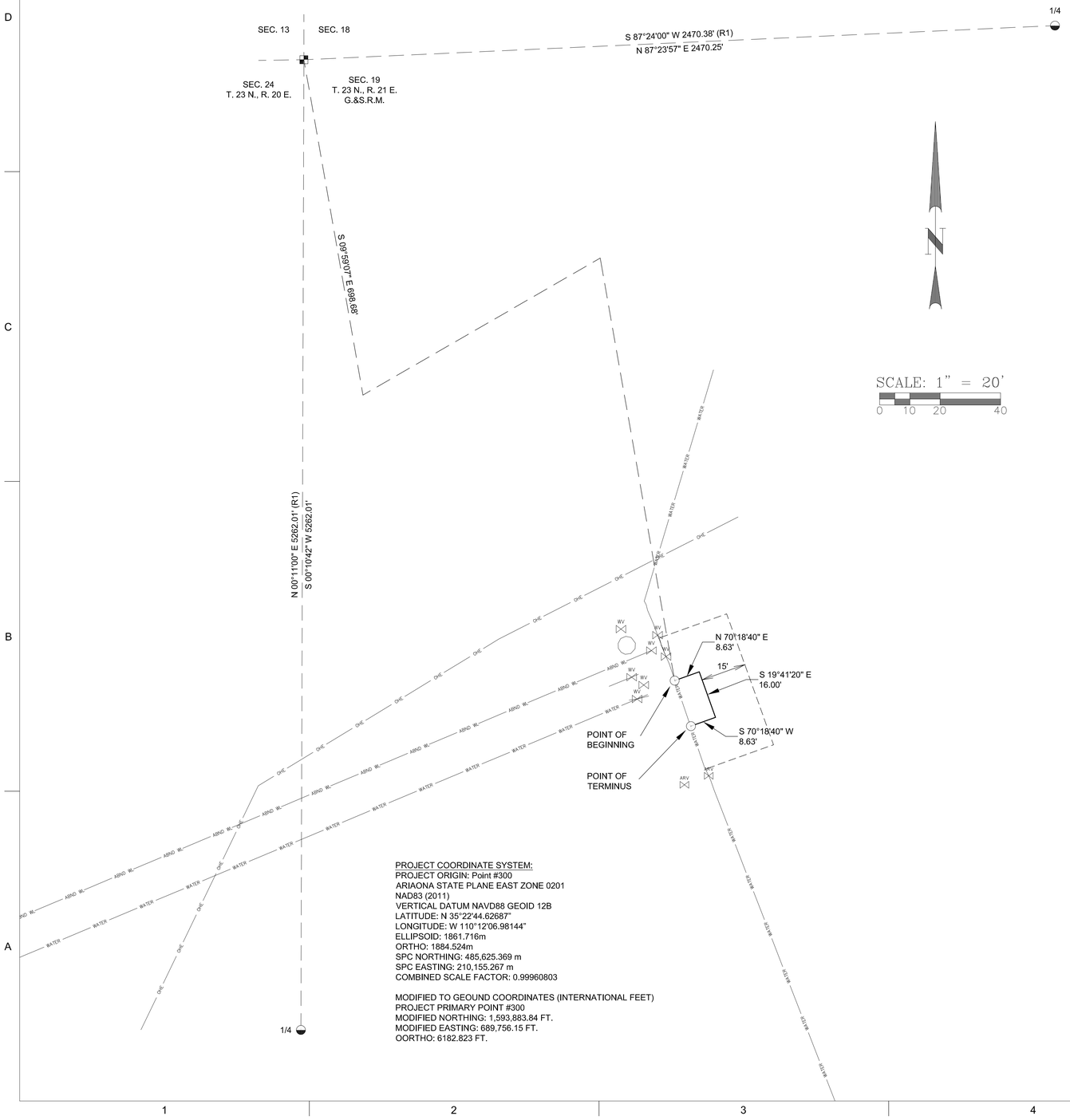
DESIGNED:
DRAWN: H.GOLDTOOTH
CHECKED: H.GOLDTOOTH
CHECKED:
APPROVED: H.GOLDTOOTH
FILENAME
BC PROJECT NUMBER 157520
CLIENT PROJECT NUMBER 00357.21

RESUTS OF SURVEY

DRAWING NUMBER V-003

SHEET NUMBER 8 OF 59

Path: E:\21533 DILKON WASH WLI\SUBMITTAL FILENAME: 21533 DILKON WASH ROW.DWG PLOT DATE: 3/11/2022 2:38 PM CAD USER: HALBERT GOLDTOOTH



PROJECT COORDINATE SYSTEM:
PROJECT ORIGIN: Point #300
ARIAONA STATE PLANE EAST ZONE 0201
NAD83 (2011)
VERTICAL DATUM NAVD88 GEOID 12B
LATITUDE: N 35°22'44.62687"
LONGITUDE: W 110°12'06.98144"
ELLIPSOID: 1861.716m
ORTHO: 1884.524m
SPC NORTHING: 485,625.369 m
SPC EASTING: 210,155.267 m
COMBINED SCALE FACTOR: 0.99960803

MODIFIED TO GEOUND COORDINATES (INTERNATIONAL FEET)
PROJECT PRIMARY POINT #300
MODIFIED NORTHING: 1,593,883.84 FT.
MODIFIED EASTING: 689,756.15 FT.
OORTHO: 6182.823 FT.

RESULTS OF SURVEY

DILKON PASS WATER SYSTEM
CHECK VALVE PROPOSED WATERLINE
0.02 ± ACRE
LOCATED IN SECTION 19
T. 23 N., R. 21 E., G.&S.R.M.
DILKON, NAVAJO COUNTY, ARIZONA
DILKON CHAPTER, DISTRICT 17, NAVAJO NATION

LEGAL DESCRIPTION:
A STRIP OF LAND 30 FEET WIDE SITUATED WITHIN SECTION 19, TOWNSHIP 23 NORTH, RANGE 21 EAST, GILA & SALT RIVER MERIDIAN, DISTRICT 17, NAVAJO NATION, IN DILKON, NAVAJO COUNTY, STATE OF ARIZONA, MORE PARTICULARLY DESCRIBED AS FOLLOWS:

COMMENCING AT THE NORTHWEST CORNER OF SECTION 19, TOWNSHIP 23 NORTH, RANGE 21 EAST, MARKED BY B.L.M. BRASS CAP, FROM WHICH THE NORTH QUARTER CORNER OF SECTION 19 LIES N 87°23'57" E, A DISTANCE OF 2470.25 FEET (BASIS OF BEARINGS, ARIZONA STATE PLANE EAST ZONE GRID BEARING)(S 87°24'00" W, 2470.38 FEET PER B.L.M. SURVEY PLAT 1036-A, DATED JANUARY 9, 2006, R1); THENCE S 09°59'07" E, A DISTANCE OF 698.68 FEET TO THE POINT OF BEGINNING OT THE HEREIN DESCRIBED CENTERLINE;

THENCE N 70°18'40" E, A DISTANCE OF 8.63 FEET;
THENCE S 19°41'20" E, A DISTANCE OF 16.00 FEET;
THENCE S 70°18'40" W, A DISTANCE OF 8.63 TO THE POINT OF TERMINUS OF SAID CENTERLINE.

THE SIDE LINES OF SAID 30-FOOT WIDE EASEMENT LYING 15 FEET ON EACH SIDE OF CENTERLINE TO BE EXTENDED OR SHORTENED TO MEET AT ANGLE.

SAID PARCEL BEING 0.02 ACRES MORE OR LESS AND BEING SUBJECT TO ANY AND ALL EXISTING EASMENTS FOR UTILITIES LOCATED THEREIN.

EXHIBIT "A"

LEGEND:
- FOUND 3" BRASS CAP, B.L.M. SECTION CORNER
- FOUND 3" BRASS CAP, B.L.M. 1/4 CORNER
- SET 5/8" REBAR W/ PLASTIC CAP STAMPED "GPS RLS 42048"
- CALCULATED POINT, NOTHING FOUND OR SET

CONTROL MONUMENTS:
POB: LAT 35°23'07.49796" N; LONG 110°09'37.15928" W
SECTION CORNER: LAT 35°23'14.30128" N; LONG 110°09'38.62133" W
1/4 CORNER: LAT 35°23'15.40406" N; LONG 110°09'08.82705" W

REFERENCES:
(R1) BUREAU OF LAND MANAGEMENT SURVEY PLAT 1305-A, DATED JUNE 26,2006.
(R2) AS-BUILT RIGHT-OF-WAY MAP OF WATER SYSTEM & INDIVIDUAL WASTE DISPOSAL FACILITIES, PROJECT NO. NA-78-206, OFFICE OF ENVIRONMENTAL HEALTH & ENGINEERING, INDIAN HEALTH SERVICE, DATED APRIL 10, 1980.
(R3) STATE PLANE COORDINATES PER NATIONAL GEODETIC SURVEY, O.P.U.S. PROCESSED GPS DATA.

BASIS OF BEARINGS:
THE EAST SECTION LINE OF SECTION 23, T. 23 N., R. 20 E., WITH A GPS DERIVED BEARING OF S 00°09'19" E AND A B.L.M. BEARING OF N 00°10'00" W PER B.L.M. PLAT 1305-A. THE ARIZONA STATE PLANE COORDINATE EAST ZONE 0201 GRID BEARING DERIVED FROM GPS OBSERVATIONS AND NATIONAL GEODETIC SURVEY OPUS REPORTS.

SURVEYOR'S NOTE:
1. THE LOCATION OF THE BOUNDARY OF THIS TRACT WAS DETERMINED BY THE LOCATION OF THE EXISTING WATER SYSTEM STRUCTURES. THE PREVIOUS SURVEY DID NOT MATCH THE EXISTING WATER SYSTEM. THIS SURVEY MAKES NO STATEMENT REGARDING RIGHTS TO THIS TRACT OR PRIOR RIGHTS WHICH MAY HAVE EXISTED PRIOR TO THIS SURVEY.

CERTIFICATION:
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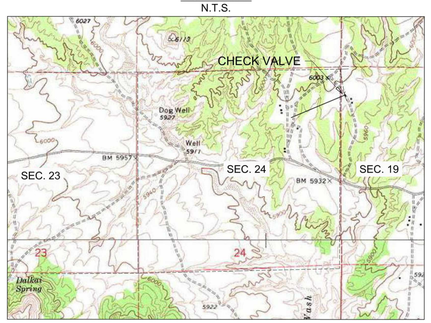
_____
HALBERT O. GOLDTOOTH, AZ RLS 42048

BASIS OF BEARINGS:
THE NORTH SECTION LINE OF SECTION 19, T. 23 N., R. 21 E., WITH A GRID BEARING OF N 87°23'57" E AND A B.L.M. BEARING OF S 87°24'00" W PER B.L.M. PLAT 1306-A. THE ARIZONA STATE PLANE COORDINATE EAST ZONE 0201 GRID BEARING DERIVED FROM GPS OBSERVATIONS AND NATIONAL GEODETIC SURVEY OPUS REPORTS.

VICINITY MAP
N.T.S.



Brown AND Caldwell
SALT LAKE CITY, UT

REGISTERED LAND SURVEYOR
CERTIFICATE NO.
42048
HALBERT O.
GOLDTOOTH
3-2-22
DATE SIGNED
ARIZONA U.S.A.

CONSTRUCTION ISSUE

NAVAJO TRIBAL UTILITY AUTHORITY
UTILITIES FOR THE NAVAJO NATION

DILKON PASS PIPELINE AND PUMP STATION

REVISIONS

REV	DATE	DESCRIPTION

LINE IS 2 INCHES AT FULL SIZE

DESIGNED:
DRAWN: H.GOLDTOOTH
CHECKED: H.GOLDTOOTH
CHECKED:
APPROVED: H.GOLDTOOTH
FILENAME
BC PROJECT NUMBER 157520
CLIENT PROJECT NUMBER 00357.21

RESUTS OF SURVEY

DRAWING NUMBER
V-004

SHEET NUMBER 9 OF 59

Path: E:\21533 DILKON PASS WLI.DWG FILENAME: DILKON PASS CHECK VALVE ROW.DWG PLOT DATE: 2/24/2022 12:34 PM CAD USER: HALBERT GOLDTOOTH

PLAN

0 10 20

SCALE IN FEET

PLAN NORTH

GENERAL NOTES

1. ALL LOCATIONS OF UTILITIES SHOWN ARE APPROXIMATE. CONTRACTOR TO FIELD VERIFY AND POTHOLE AS REQUIRED TO COMPLETE THE WORK.
2. CONTRACTOR TO FIELD VERIFY LOCATION, ELEVATIONS, INVERTS, MATERIAL, DIMENSIONS AND CONDITION OF EXISTING UTILITIES.

KEY NOTES

1. EXISTING PUMP HOUSE TO BE DEMOLISHED. REMOVE EXISTING EQUIPMENT AND RETURN TO OWNER PRIOR TO DEMOLITION.
2. EXISTING WATERLINE TO BE ABANDONED. CUT AND CAP EXISTING LINE, AS REQUIRED.
3. EXISTING SUBMERSIBLE PUMP MANHOLE. REMOVE EXISTING EQUIPMENT AND RETURN TO OWNER. REMAINING MANHOLE TO BE ABANDONED AND FILLED WITH TYPE 'K' MATERIAL..
4. EXISTING FENCE TO BE REMOVED.
5. EXISTING CONCRETE SIDEWALK TO BE REMOVED.
6. EXISTING VALVE TO BE ABANDONED IN PLACE.
7. EXISTING PRV MANHOLE. REMOVE EXISTING EQUIPMENT AND RETURN TO OWNER. REMAINING MANHOLE TO BE ABANDONED AND FILLED WITH TYPE 'K' MATERIAL.

Call at least two full working days before you begin excavation.

ARIZONA 811 Arizona Blue Stake, Inc.

Dial 8-1-1 or 1-800-STAKE-IT (782-5348)
In Maricopa County: (602) 263-1100

Brown AND Caldwell

SALT LAKE CITY, UT

CERTIFICATE NO. 36697 STEVEN BRENCHLEY Date Signed 3/3/2022 ARIZONA, U.S.A.

CONSTRUCTION ISSUE

NAVAJO TRIBAL UTILITY AUTHORITY — UTILITIES FOR THE NAVAJO NATION

DILKON PASS PIPELINE AND PUMP STATION

REVISIONS

REV	DATE	DESCRIPTION

LINE IS 2 INCHES AT FULL SIZE

DESIGNED:	C. WILLMORE
DRAWN:	T. PRIDEMORE
CHECKED:	C. WILLMORE
CHECKED:	- -
APPROVED:	S. BRENCHLEY
FILENAME	CD-100.dwg
BC PROJECT NUMBER	157520
CLIENT PROJECT NUMBER	

CIVIL DEMOLITION

PUMP STATION DEMOLITION SITE PLAN

DRAWING NUMBER

CD-100

SHEET NUMBER 10 OF 59

Path: C:\BCPWD2344906 FILENAME: CD-100.DWG PLOT DATE: 3/4/2022 4:18 PM CAD USER: TYLER PRIDEMORE

CIVIL SYMBOLS

W	WATERLINE
W	EXISTING WATERLINE
OHP	OVERHEAD POWER LINE
OHP	EXISTING OVERHEAD POWER LINE
UGTEL	EXISTING UNDERGROUND TELEPHONE LINE
G	EXISTING GAS LINE
O O	FENCE
X X	EXISTING FENCE
6700	CONTOUR LINE
6700	EXISTING CONTOUR LINE
	GATE VALVE
WV	EXISTING GATE VALVE
	WELL
W	EXISTING WELL
	POWER POLE
	EXISTING POWER POLE
	EXISTING GUY WIRE
	REDUCER
D	EXISTING REDUCER
	FLUSH VALVE
	AIR RELEASE VALVE
	SURVEY MARKING
	WATER LINE CASING

GENERAL CIVIL NOTES

GENERAL NOTES

1. CONTRACTOR SHALL VERIFY (POTHOLE IF NECESSARY) ALL EXISTING UTILITIES (VERTICAL AND HORIZONTAL LOCATION), CONDUITS, FOUNDATIONS AND OTHER UNDERGROUND OBJECTS PRIOR TO THE START OF WORK.
2. FENCES, SIGNS, CURBS, LIGHT POLES, IRRIGATION PIPING, CONTROL WIRING, AND SPRAY HEADS, ETC. SHALL BE REMOVED AND REPLACED AS NECESSARY TO PERFORM THE WORK. UNLESS OTHERWISE INDICATED, ALL SUCH WORK SHALL BE INCIDENTAL TO CONSTRUCTION OF THE PROJECT. ALL DISTURBED AREAS INCLUDING CONCRETE STEPS, TIMBER STEPS, RETAINING WALLS, CONCRETE SIDEWALKS, PAVEMENT, LIGHT POSTS, CURBS, UNDERGROUND PIPING AND STRUCTURES SHALL BE RESTORED TO MATCH EXISTING UNLESS OTHERWISE NOTED.
3. ALL AREAS DISTURBED BY THE CONTRACTOR BEYOND THE LIMIT OF WORK SHALL BE RESTORED AT NO ADDITIONAL COST TO THE OWNER.
4. THE CONTRACTOR SHALL NOT STORE ANY APPARATUS, MATERIALS, SUPPLIES, AND EQUIPMENT ON DRAINAGE STRUCTURES OR WITHIN 100 FEET OF WETLANDS.
5. THE CONTRACTOR SHALL GRADE PROPOSED SLOPES TO MEET EXISTING SLOPES WHERE SHOWN ON PLANS.
6. THE CONTRACTOR SHALL INSTALL AND MAINTAIN EROSION CONTROL DEVICES.
7. THE CONTRACTOR SHALL NOTIFY NTUA AT LEAST 72 HOURS PRIOR TO EXCAVATING NEAR ANY UTILITIES.
8. CONTRACTOR LAYOUT AREAS SHALL BE COORDINATED AND APPROVED BY THE CONSTRUCTION MANAGER AND NTUA. LIMITED SPACE IS AVAILABLE WITHIN THE SITE. NTUA SHALL NOT BE RESPONSIBLE FOR PROTECTING OR SECURING CONTRACTOR LAYOUT AND STORAGE AREAS, AND OWNER SHALL NOT BE LIABLE FOR THEFT OR DAMAGE TO CONTRACTORS STORED MATERIALS OR EQUIPMENT.
9. ALL EXISTING UTILITY INFORMATION WAS OBTAINED FROM NTUA AND FIELD SURVEY. THIS INFORMATION MAY NOT BE COMPLETELY ACCURATE OR INDICATE ALL OF THE UTILITIES, UNDERGROUND PIPING, OR BURIED STRUCTURES PRESENT.
10. ALL TRENCH EXCAVATIONS SHALL BE COMPLETELY CLOSED AT THE END OF EACH WORKING DAY BY BACKFILLING. COVERING WITH STEEL PLATES MAY BE ALLOWED IF APPROVED BY THE CONSTRUCTION MANAGER.
11. THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE REGULATIONS OF THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA).
12. REFER TO THE SPECIFICATIONS FOR INFORMATION REGARDING ANY NECESSARY COORDINATION WITH OTHERS, INCLUDING RESPONSIBILITIES AND RELATED COSTS.

SITE GRADING NOTES

1. STRIPPING OF TOPSOIL SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02200, EARTHWORK.
2. ALL ROAD AND PARKING AREA SURFACES SHALL PITCH 2 PERCENT MINIMUM UNLESS OTHERWISE NOTED.
3. CONTRACTOR SHALL NOT TRACK OR SPILL EARTH, DEBRIS OR OTHER CONSTRUCTION MATERIAL ON PUBLIC OR PRIVATE STREETS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE IMMEDIATE ASSOCIATED CLEAN UP.
4. ALL CATCH BASINS, MANHOLES, VALVE PITS, VALVE BOXES AND OTHER BURIED FACILITIES WITH SURFACE ACCESS SHALL BE ADJUSTED TO MATCH FINAL GRADES, UNLESS OTHERWISE INDICATED.
5. CONTRACTOR SHALL REMOVE AND DISPOSE OF ALL DEBRIS AND EXCESS EXCAVATED MATERIAL FROM WITHIN THE CONSTRUCTION LIMIT OF WORK, TO A SUITABLE SITE IN COMPLIANCE WITH NAVAJO NATION REGULATIONS.
6. WHERE EXISTING PAVEMENT IS REMOVED AND REPLACED, MATCH EXISTING GRADES TO THE EXTENT POSSIBLE. COORDINATE FINE GRADING WITH THE CONSTRUCTION MANAGER.
7. CONTRACTOR TO REGRADE, AND RESEED ALL DISTURBED AREAS PER CONSTRUCTION MANAGER AND PER SPEC 02270.

SITE PIPING NOTES

1. ALL PIPE LINES SHALL SLOPE UNIFORMLY BETWEEN ELEVATIONS INDICATED ON THE DRAWINGS. NO CRESTS IN PIPING WILL BE PERMITTED. ALL HORIZONTAL AND VERTICAL BENDS IN PRESSURIZED LINES SHALL BE RESTRAINED JOINTS. PROVIDE ALL BENDS (HORIZONTAL AND VERTICAL) AS REQUIRED TO MEET THE GRADES AND ALIGNMENT INDICATED ON THE DRAWINGS.
2. ALL BURIED CONNECTIONS TO STRUCTURES SHALL HAVE SLEEVE TYPE (SOLID SLEEVE) FLEXIBLE CONNECTIONS APPROXIMATELY 4 FEET FROM THE STRUCTURES. ALL SLEEVE TYPE COUPLINGS ON PRESSURE LINES SHALL BE RESTRAINED.
3. OPENINGS FOR PIPE IN PRECAST MANHOLE BASES SHALL BE CAST IN THE REQUIRED LOCATIONS DURING MANHOLE MANUFACTURE. FIELD CUT OPENINGS WILL NOT BE PERMITTED UNLESS APPROVED BY THE CONSTRUCTION MANAGER.

SITE PIPING NOTES (CONT'D.)

4. A MINIMUM OF 42-INCHES OF COVER REQUIRED ON PIPES UNLESS NOTED OTHERWISE.
5. REFER TO SPECIFICATION SECTION 02200 AND CIVIL DETAILS FOR PIPE AND STRUCTURE BEDDING AND BACKFILL REQUIREMENTS.
6. COMPACTION TESTS WILL BE PERFORMED IN ACCORDANCE WITH SPECIFICATION SECTION 02200, EARTHWORK. ANY SETTLEMENT OCCURRING WITHIN ONE YEAR OF FINAL COMPLETION OF THE WORK SHALL BE CORRECTED BY THE CONTRACTOR AT NO ADDITIONAL COST.
7. WHERE NEW PIPING IS TO BE CONNECTED TO EXISTING PIPING, THE CONTRACTOR SHALL EXCAVATE A TEST PIT TO VERIFY LOCATION, ELEVATION, ORIENTATION AND MATERIAL OF CONSTRUCTION BEFORE ORDERING MATERIALS.
8. WHERE NEW PIPING IS TO BE CONNECTED TO EXISTING PIPING, THE CONTRACTOR SHALL FURNISH AND INSTALL ALL ADAPTERS, FITTINGS, AND ADDITIONAL PIPE AS REQUIRED TO COMPLETE THE CONNECTION.
9. POTABLE WATER LINES SHOULD BE INSTALLED OVER WASTEWATER LINES. A MINIMUM SEPARATION OF 18 INCHES BETWEEN THE BOTTOM OF THE POTABLE WATER LINE AND THE TOP OF THE WASTEWATER LINE SHALL BE MAINTAINED. A HORIZONTAL SEPARATION OF AT LEAST 10 FEET MUST ALSO BE MAINTAINED.
10. ALL STRUCTURES AND PIPELINES LOCATED ADJACENT TO ANY TRENCH EXCAVATION SHALL BE PROTECTED AND FIRMLY SUPPORTED BY THE CONTRACTOR UNTIL THE TRENCH IS BACKFILLED. DAMAGE TO ANY SUCH STRUCTURES CAUSED BY OR RESULTING FROM THE CONTRACTOR'S OPERATIONS SHALL BE REPAIRED AT THE CONTRACTORS EXPENSE. ALL UTILITIES REQUIRING REPAIR, RELOCATION OR ADJUSTMENT AS A RESULT OF THE PROJECT SHALL BE COORDINATED THROUGH THE CONSTRUCTION MANAGER.
11. ALL EXISTING UTILITIES ENCOUNTERED DURING CONSTRUCTION ARE TO REMAIN IN SERVICE THROUGHOUT THE PROJECT, UNLESS OTHERWISE NOTED.
12. ALL EXISTING UTILITIES REPLACED OR RELOCATED SHALL BE CONSTRUCTED OF NEW MATERIALS, APPROVED BY THE CONSTRUCTION MANAGER, SIMILAR TO THOSE OF THE EXISTING UTILITY.

SITE PIPING NOTES (CONT'D.)

13. UNLESS OTHERWISE INDICATED, CONCRETE USED FOR ENCASEMENT, ANCHOR BLOCKS, BACKING, PIPE CRADLES, ARCHES AND FILL SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI AT 28 DAYS.
14. SURVEY COORDINATES AND ELEVATIONS SHALL BE PROVIDED FOR ALL BURIED PIPING BENDS AND VALVES ON AS-BUILT DRAWINGS.
15. PROVIDE VALVE BOXES FOR ALL BURIED VALVES.
16. THE CONTRACTOR WILL POTHOLE AS REQUIRED AND SHALL FIELD INVESTIGATE PIPING AND INTERFERENCES WITH EXISTING FACILITIES PRIOR TO BEGINNING WORK. CONTRACTOR SHALL FIELD ROUTE NEW LINES AS NECESSARY TO AVOID EXISTING FACILITIES AND SHALL COORDINATE FIELD ROUTING WITH CONSTRUCTION MANAGER.
17. UNLESS NOTED OTHERWISE ALL UNDERGROUND PIPING SHALL BE INSTALLED PER TRENCH DETAIL C/C-003
18. ASPHALT SURFACES DISTURBED DURING UNDERGROUND PIPING INSTALLATION, DUCT BANK INSTALLATION AND OTHER ACTIVITIES SHALL BE REPAIRED.

SITE LAYOUT NOTES

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE LAYOUT OF ALL PROPOSED WORK AS SHOWN ON THE DRAWINGS.
2. CONTROL POINTS ON SHEET V-001 DEFINE THE CONSTRUCTION CONTROL. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING THIS PROVIDED LAYOUT INFORMATION THROUGHOUT THE COURSE OF CONSTRUCTION. REPORT ANY LAYOUT DISCREPANCIES IMMEDIATELY TO THE CONSTRUCTION MANAGER.
3. IN GENERAL, THE GIVEN STRUCTURE LOCATIONS ARE TO THE OUTSIDE FACE OF THE STRUCTURE FOUNDATION WALL, NOT FOOTINGS. REFER TO THE CIVIL AND STRUCTURAL DRAWINGS FOR STRUCTURE DIMENSIONS. RADII SHOWN FOR ROADS ARE TO EDGE OF PAVEMENT.
4. THE LOCATION AND LIMITS OF ALL ON-SITE WORK AND STORAGE AREAS SHALL BE REVIEWED/COORDINATED WITH, AND ACCEPTABLE TO, THE OWNER AND CONSTRUCTION MANAGER. THE CONTRACTOR SHALL LIMIT HIS ACTIVITIES TO THESE AREAS.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR RE-ESTABLISHING AND RESETTING ALL EXISTING PROPERTY MONUMENTS DISTURBED BY HIS OPERATIONS. THIS WORK SHALL BE DONE BY A LAND SURVEYOR REGISTERED IN THE STATE OF ARIZONA AT NO ADDITIONAL COST TO THE OWNER.
6. WRITTEN DIMENSIONS SHALL PREVAIL. DO NOT SCALE DISTANCES FROM THE DRAWINGS. REPORT ANY DISCREPANCIES IMMEDIATELY TO THE CONSTRUCTION MANAGER.

SITE LAYOUT NOTES (CONT'D.)

7. SURVEY IS BASED ON NAD 83 AND THE ARIZONA STATE PLANE EAST ZONE MEASURE IN INTERNATIONAL FEET. SURVEY ELEVATIONS ARE BASED ON NAVD 88 EXPRESSED IN INTERNATIONAL FEET. SHOWN DISTANCES AND COORDINATES AT GROUND VALUES NOT GRID VALUES. TO OBTAIN SPC GRID VALUES MULTIPLY THE DISTANCE AND COORDINATE SHOWN BY A COMBINED FACTOR OF 0.99960803.

PERMITS AND NOTIFICATION NOTES

1. THE CONTRACTOR SHALL COMPLETE A STORMWATER POLLUTION PREVENTION PLAN (SWPPP) FOR THE PROJECT. SEE SPECIFICATION SECTION 01561.
2. THE CONTRACTOR SHALL NOTIFY THE CONSTRUCTION MANAGER TWENTY-FOUR (24) HOURS PRIOR TO COMMENCING PERMITTED WORK, TWENTY-FOUR (24) HOURS PRIOR TO ANY REQUIRED INSPECTION, AND AFTER COMPLETING WORK COVERED BY THE PERMIT.
3. A REQUEST FOR SHUTDOWN SHALL BE REQUIRED WHENEVER CONNECTIONS ARE MADE TO ANY UTILITY LINE, INCLUDING ELECTRIC POWER AND COMMUNICATION LINES; GAS, WATER, AND SANITARY SEWERS OR STORM SEWERS. CONNECTIONS TO ANY UTILITY WITHOUT AN APPROVED REQUEST WILL MAKE THE CONTRACTOR LIABLE TO THE OWNER FOR CORRECTION OF ANY DEFICIENCIES AND/OR RESULTING PROBLEMS, INCLUDING (BUT NOT LIMITED TO) HEALTH, SAFETY, AND FINANCIAL PROBLEMS. THE CONTRACTOR SHALL REQUEST PERMISSION AT LEAST FOUR (4) WORKING DAYS PRIOR TO THE DAY PLANNED FOR ANY UTILITY SHUT-DOWN. ALL UTILITY SHUT-DOWNS ARE SUBJECT TO APPROVAL BY THE OWNER.

Brown AND Caldwell

SALT LAKE CITY, UT

CERTIFICATE NO. 36697 STEVEN BRENCHLEY Date Signed 3/3/2022 ARIZONA, U.S.A.

CONSTRUCTION ISSUE

NAVAJO TRIBAL UTILITY AUTHORITY · NTUA · UTILITIES FOR THE NAVAJO NATION

DILKON PASS PIPELINE AND PUMP STATION

REVISIONS

REV	DATE	DESCRIPTION

LINE IS 2 INCHES AT FULL SIZE

DESIGNED: C. WILLMORE
DRAWN: T. PRIDEMORE
CHECKED: C. WILLMORE
CHECKED: - -
APPROVED: S. BRENCHLEY

FILENAME
C-001.dwg

BC PROJECT NUMBER
157520

CLIENT PROJECT NUMBER

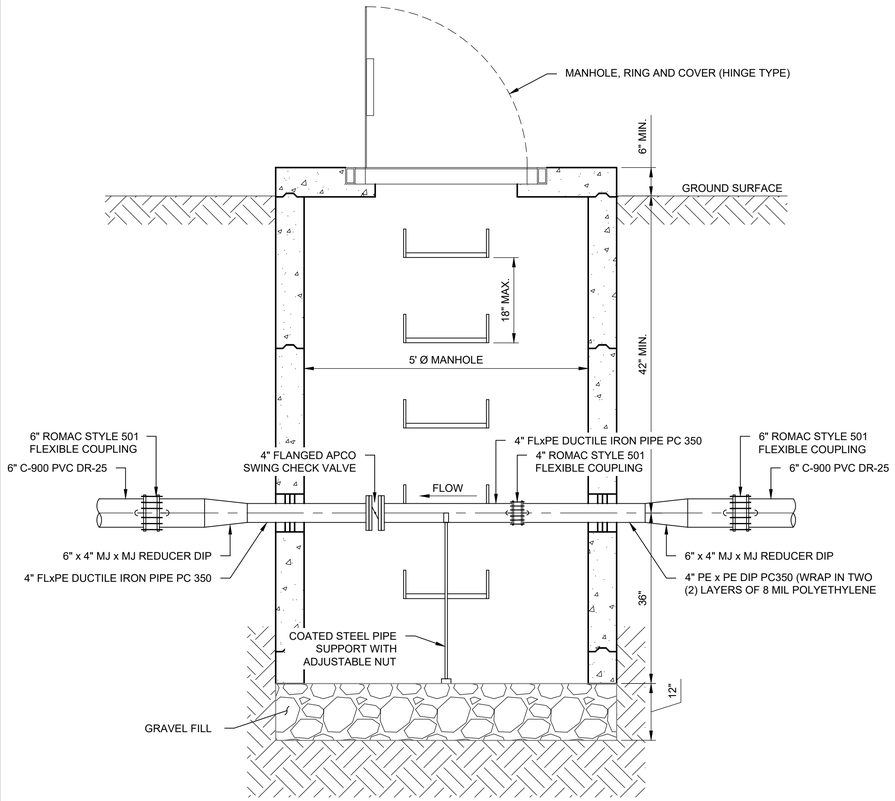
CIVIL

GENERAL CIVIL NOTES AND SYMBOLS

DRAWING NUMBER
C-001

SHEET NUMBER 11 OF 59

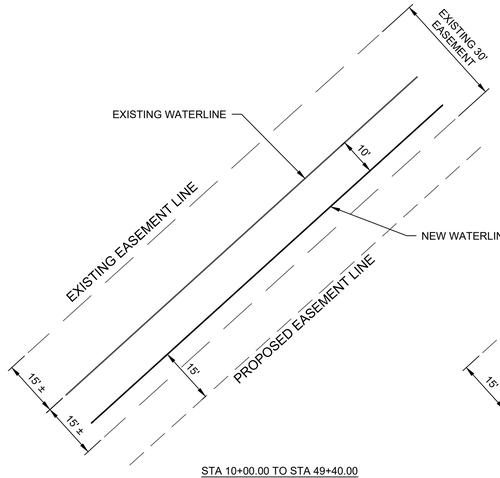
Path: C:\BCPW\D2344906 FILENAME: C-001.DWG PLOT DATE: 3/4/2022 4:17 PM CAD USER: TYLER PRIDEMORE



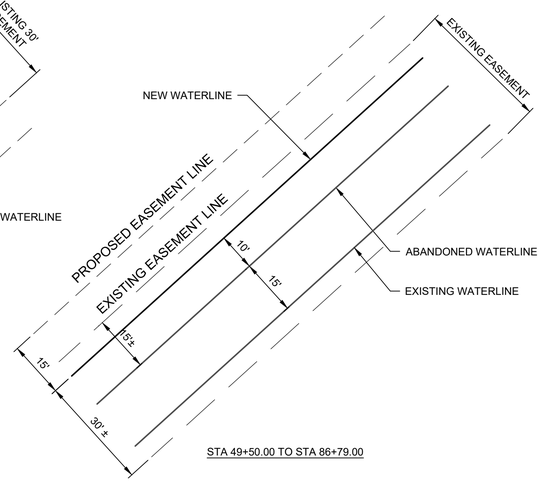
CHECK VALVE SECTION DETAIL

DETAIL (A / -)

NOT TO SCALE



STA 10+00.00 TO STA 49+40.00

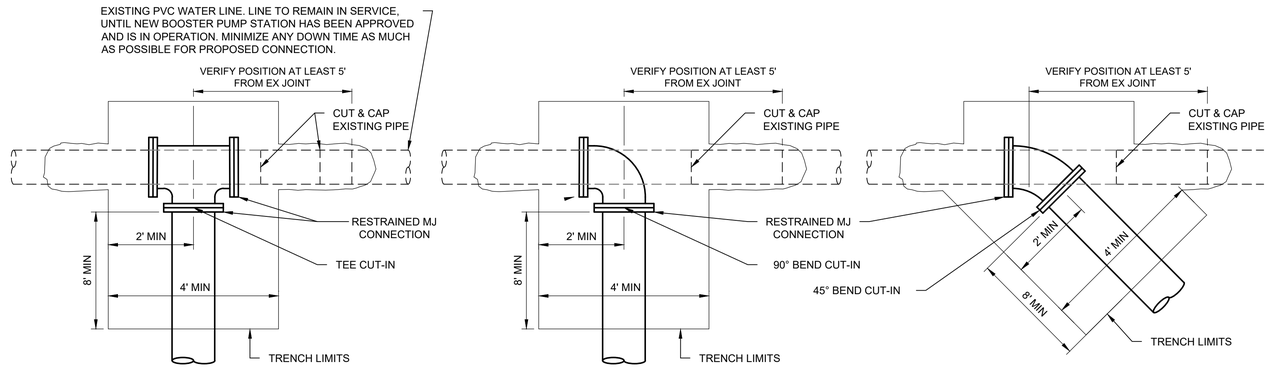


STA 49+50.00 TO STA 86+79.00

TYPICAL EASEMENT DETAIL

DETAIL (B / -)

SCALE: N.T.S.



NOTES:

1. ALL PIPE, FITTINGS, APPURTENANCES AND CONNECTIONS TO EXISTING PIPELINES SHALL BE RATED FOR AND FULLY RESTRAINED FOR THE OPERATING AND TESTING PRESSURES SPECIFIED.
2. SEE NTUA STD DWG WS-19 FOR REQUIRED GRAVITY / THRUST BLOCKS.

CUT & CAP CONNECTION

DETAIL (C / -)

SCALE: N.T.S.

Brown AND Caldwell

SALT LAKE CITY, UT

CERTIFICATE NO. 36697 STEVEN BRENCHLEY Date Signed 3/3/2022 ARIZONA, U.S.A.

CONSTRUCTION ISSUE

NAVAJO TRIBAL UTILITY AUTHORITY · UTILITIES FOR THE NAVAJO NATION · NTUA

DILKON PASS PIPELINE AND PUMP STATION

REVISIONS

REV	DATE	DESCRIPTION

LINE IS 2 INCHES AT FULL SIZE

DESIGNED:	C. WILLMORE
DRAWN:	T. PRIDEMORE
CHECKED:	C. WILLMORE
CHECKED:	- -
APPROVED:	S. BRENCHLEY

FILENAME
C-002.dwg

BC PROJECT NUMBER
157520

CLIENT PROJECT NUMBER

CIVIL

MISCELLANEOUS DETAILS -1

DRAWING NUMBER
C-002

SHEET NUMBER 12 OF 59

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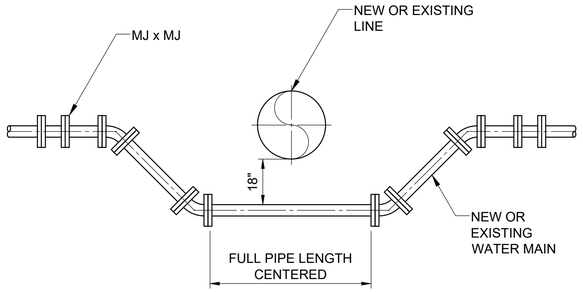
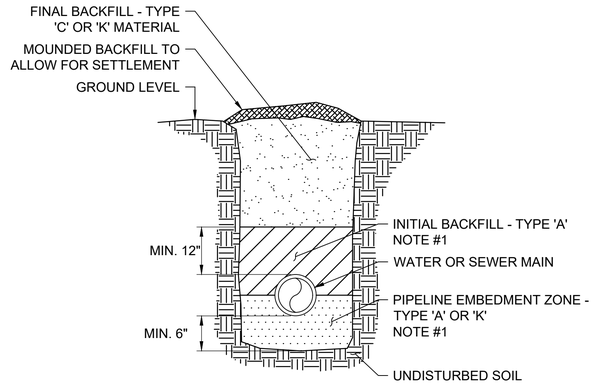
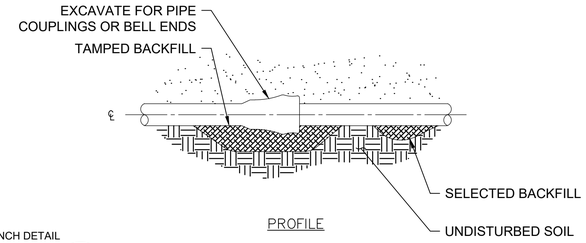


NOTES:
1. PIPE SHALL BE DUCTILE IRON AND CONFORM TO AWWA C151, THICKNESS CLASS 50.
2. MECHANICAL JOINT PIPE SHALL CONFORM TO AWWA C104, JOINTS TO CONFORM TO AWWA C111.
3. MECHANICAL JOINT FITTINGS SHALL CONFORM TO AWWA C153, JOINTS TO CONFORM TO AWWA C11.
4. MECHANICAL JOINT PIPE AND FITTINGS SHALL BE RESTRAINED EBBA IRON MEGALUGS, OR EQUAL.

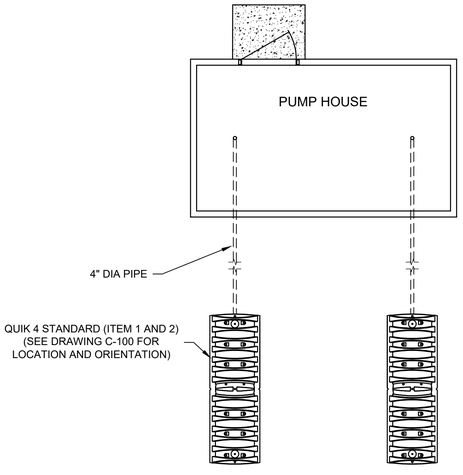
WATER MAIN LOOP
DETAIL A -
NOT TO SCALE



NOTES:
1. HAND COMPACTED IN 6" LIFTS FROM BOTTOM OF TRENCH TO 12" ABOVE PIPE CROWN.
2. OPEN CUT OR PAVED OR GRAVEL ROADS (IF REQUIRED), BACK FILL MINIMUM COMPACTION 95% OPTIMUM DENSITY LIFTS.
3. REPAVING AND REGRAVELING WILL BE DONE TO ROAD OWNER'S REQUIREMENTS.
4. KEEP LOWER 5' OF TRENCH WALL VERTICAL, IF POSSIBLE. UPPER PART OF THE TRENCH WILL VARY IN WIDTH TO COMPENSATE FOR UNSTABLE SOIL. APPLICABLE O.S.H.A. REQUIREMENTS SHALL BE MET.

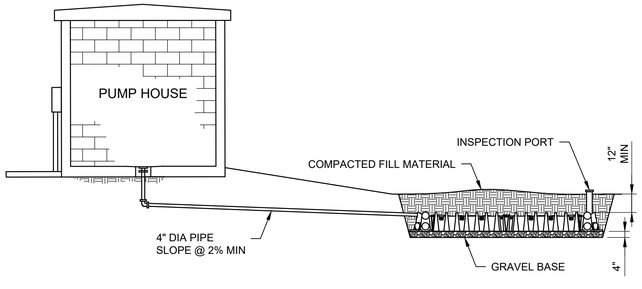


TRENCH DETAIL
DETAIL C -
NOT TO SCALE



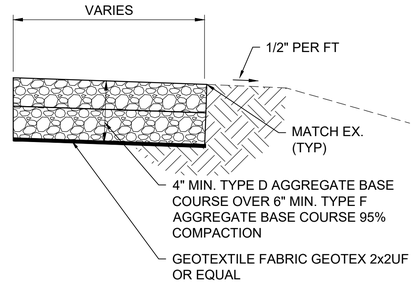
PLAN
SCALE: NOT TO SCALE

BILL OF MATERIALS		
ITEM	QUANTITY	DESCRIPTION
1	4	QUIK 4 CHAMBER: 34" W x 48" L x 12" H
2	4	QUIK 4 COMBO-END PLATE, SIZE: 34" W x 12" H



ELEVATION
SCALE: NOT TO SCALE

DRAINAGE PIPE DISCHARGE TO INFILTRATOR
DETAIL B C-100
NOT TO SCALE



GRAVEL ROAD SECTION
DETAIL D C-100
NOT TO SCALE

Brown AND Caldwell
SALT LAKE CITY, UT

CERTIFICATE NO. 36697 STEVEN BRENCHLEY Date Signed 3/3/2022 ARIZONA, U.S.A.

CONSTRUCTION ISSUE

NAVAJO TRIBAL UTILITY AUTHORITY · UTILITIES FOR THE NAVAJO NATION · NTUA

DILKON PASS PIPELINE AND PUMP STATION

REVISIONS

REV	DATE	DESCRIPTION

LINE IS 2 INCHES AT FULL SIZE

DESIGNED: C. WILLMORE
DRAWN: T. PRIDEMORE
CHECKED: C. WILLMORE
CHECKED: - -
APPROVED: S. BRENCHLEY
FILENAME C-003.dwg
BC PROJECT NUMBER 157520
CLIENT PROJECT NUMBER

CIVIL

MISCELLANEOUS DETAILS - 2

DRAWING NUMBER
C-003

SHEET NUMBER 13 OF 59

Path: C:\BCPW\D2344906 FILENAME: C-003.DWG PLOT DATE: 3/4/2022 4:18 PM CAD USER: TYLER PRIDEMORE

PLAN

0 10 20
SCALE IN FEET

PLAN NORTH

KEY NOTES

1. GRAVEL SURFACE, SEE DETAIL D / SHEET C-003. APPROX 5655 SF.
2. ELECTRICAL CABINET, REFERENCE ELECTRICAL PLANS
3. 12.0' DOUBLE-WIDE SWING GATE. SEE IHS STD DWG W-34
4. CHAINLINK FENCING. SEE IHS STD DWG W-34
5. CMU PUMPHOUSE, REFERENCE ARCHITECTURAL AND STRUCTURAL PLANS
6. 6' X 9' PRV ASSEMBLY PER IHS STANDARD DETAIL WS-4B AND WS-4C.
7. CONCRETE PAD

X SITE GRADING

MARK	NORTHING	EASTING	ELEVATION	DESCRIPTION
1	1595250.35	696477.96	5964.46	FENCE CORNER
2	1595258.95	696566.22	5962.20	FENCE CORNER
3	1595197.52	696572.20	5962.21	FENCE CORNER
4	1595188.92	696483.94	5963.78	FENCE CORNER
5	1595192.18	696517.40	5963.46	FENCE GATE
6	1595193.34	696529.35	5963.27	FENCE GATE
7	1595145.98	696521.20	5963.46	EDGE OF DRIVE
8	1595147.30	696534.63	5963.46	EDGE OF DRIVE

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ARIZONA 811 Arizona Blue Stake, Inc.
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In Maricopa County: (602) 263-1100

Brown AND Caldwell
SALT LAKE CITY, UT

CERTIFICATE NO. 36697 STEVEN BRENCHLEY Date Signed 3/3/2022 ARIZONA, U.S.A.

CONSTRUCTION ISSUE

NAVAJO TRIBAL UTILITY AUTHORITY NTUA UTILITIES FOR THE NAVAJO NATION

DILKON PASS PIPELINE AND PUMP STATION

REVISIONS

REV	DATE	DESCRIPTION

LINE IS 2 INCHES AT FULL SIZE

DESIGNED: C. WILLMORE
DRAWN: T. PRIDEMORE
CHECKED: C. WILLMORE
CHECKED: - -
APPROVED: S. BRENCHLEY
FILENAME C-100.dwg
BC PROJECT NUMBER 157520
CLIENT PROJECT NUMBER

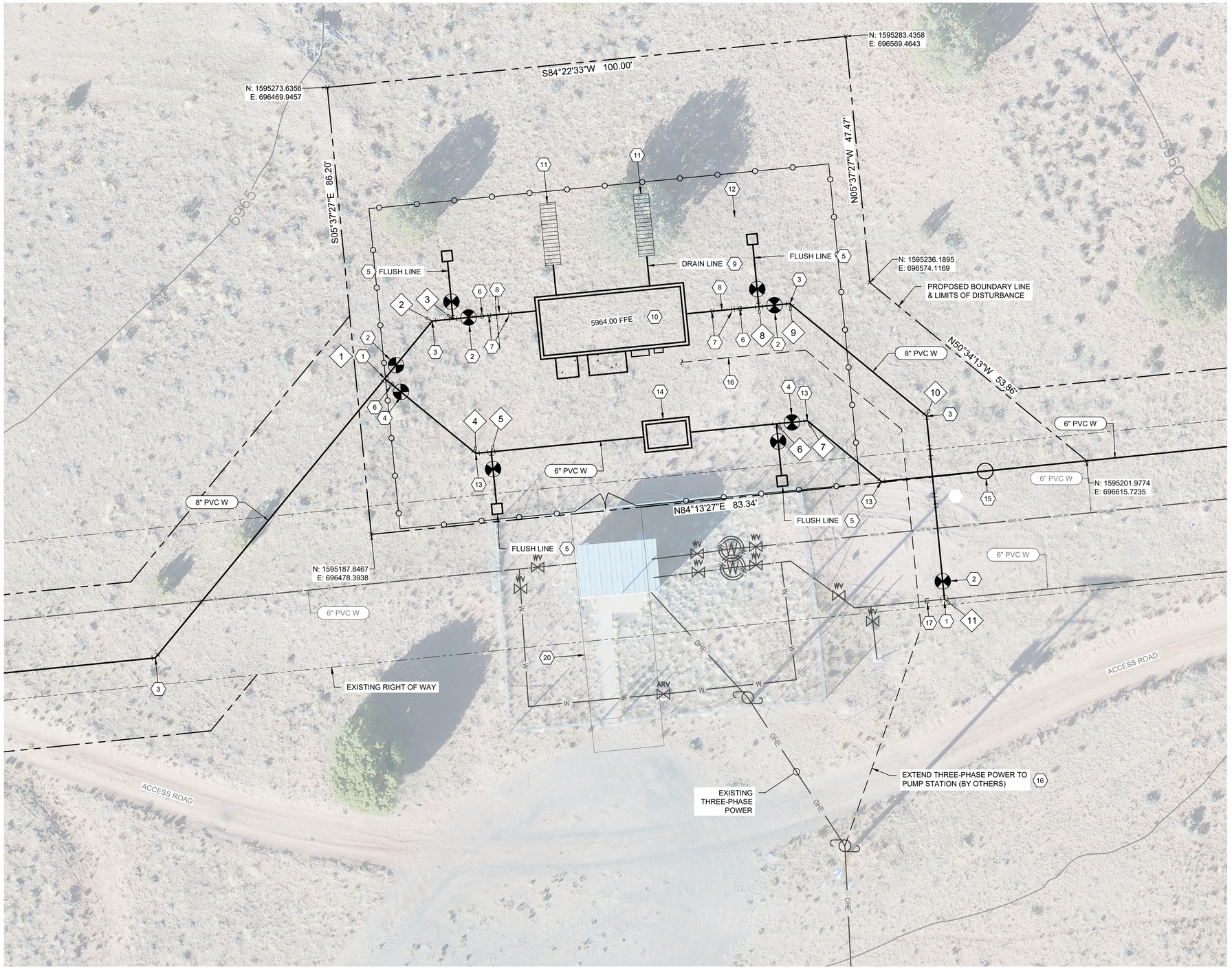
CIVIL

DILKON PASS PUMP STATION GRADING PLAN

DRAWING NUMBER
C-100

SHEET NUMBER 14 OF 59

Path: C:\BCPW\D2344906 FILENAME: C-100.DWG PLOT DATE: 3/4/2022 4:20 PM CAD USER: TYLER PRIDEMORE



PLAN

0 10 20

SCALE IN FEET

PLAN NORTH

GENERAL NOTES

1. ALL LOCATIONS OF UTILITIES SHOWN ARE APPROXIMATE. CONTRACTOR TO FIELD VERIFY AND POTHOLE AS REQUIRED TO COMPLETE THE WORK.
2. CONTRACTOR TO FIELD VERIFY LOCATION, ELEVATIONS, INVERTS, MATERIAL, DIMENSIONS AND CONDITION OF EXISTING UTILITIES.
3. CONTRACTOR TO PROVIDE THRUST BLOCKS AT ALL ELBOWS, TEES, CROSSES PER NTUA STD DWG WS-19. MECHANICAL JOINT RESTRAINTS CAN BE UTILIZED IN PLACE OF THRUST BLOCKS. EBA IRON MEGALUG SERIES 2000 PV FOR FITTINGS AND SERIES 2500 FOR PIPE JOINTS - INSTALL PER MANUFACTURE'S RECOMMENDATIONS.
4. CONTRACTOR TO INSTALL PIPE IN TRENCH PER DETAIL C / SHEET C-003.
5. CONTRACTOR TO INSTALL MARKER POST PER NTUA STD DWG WS-13.
6. EASEMENT DIMENSIONS AND PIPELINE OFFSETS ARE SHOWN IN DETAIL B/C-002.
7. SEE V-001 FOR COORDINATE CONTROL INFORMATION.
8. ALL YARD PIPING TO HAVE MJ X MJ FITTINGS UNLESS NOTED OR OTHERWISE SHOWN IN DETAILS.

KEY NOTES

1. 8" X 8" DI TEE
2. 8" DIA GATE VALVE
3. 8" DI 45D FITTING
4. 6" DIA GATE VALVE
5. 2" DIA FLUSH LINE, SEE NTUA STD DWG WS-11
6. 8" X 6" REDUCER
7. 6" DIA ROMAC STYLE 501 FLEXIBLE COUPLING
8. 6" DIA DIP PC 350
9. 4" DIA HDPE DRAIN LINE
10. CMU PUMPHOUSE, REFERENCE ARCHITECTURAL AND STRUCTURAL PLANS
11. DRAINAGE INFILTRATORS, SEE DETAIL B / SHEET C-003
12. 4" 45D FITTING
13. 6" 45D FITTING
14. 6' X 9' ANTI-CAVITATION PRV ASSEMBLY PER IHS STANDARD DETAIL WS-4B AND WS-4C. SET DOWNSTREAM PRV PRESSURE SETTING TO 60 PSI.
15. COMBO AIR VALVE, SEE NTUA STD DETAL WS-10
16. 4" SCHEDULE 200 PVC CONDUIT FOR ELECTRICAL POWER LINE
17. CUT & CAP EXISTING PIPE ONCE NEW BOOSTER PUMP STATION HAS BEEN COMPLETED AND BROUGHT ONLINE

SITE PIPING

MARK	DESCRIPTION	NORTHING	EASTING
1	8" X 8" TEE	1595217.73	696481.01
2	8" 45D FITTING	1595228.80	696490.11
3	8" X 8" X 2" TEE	1595229.19	696494.09
4	6" 45D FITTING	1595203.39	696498.45
5	6" X 6" X 2" TEE	1595203.69	696501.44
6	6" X 6" X 2" TEE	1595209.06	696556.17
7	6" 45D FITTING	1595209.65	696562.14
8	8" X 8" X 2" TEE	1595231.55	696552.81
9	8" 45D FITTING	1595232.13	696558.77
10	8" 45D FITTING	1595210.57	696585.00
11	8" 90D FITTING	1595175.40	696588.43

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ARIZONA 811 Arizona Blue Stake, Inc.

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Brown AND Caldwell

SALT LAKE CITY, UT

CERTIFICATE NO. 36697 STEVEN BRENCHLEY Date Signed 3/3/2022 ARIZONA, U.S.A.

CONSTRUCTION ISSUE

NAVAJO TRIBAL UTILITY AUTHORITY NTUA UTILITIES FOR THE NAVAJO NATION

DILKON PASS PIPELINE AND PUMP STATION

REVISIONS

REV	DATE	DESCRIPTION

LINE IS 2 INCHES AT FULL SIZE

DESIGNED: C. WILLMORE
DRAWN: T. PRIDEMORE
CHECKED: C. WILLMORE
CHECKED: - -
APPROVED: S. BRENCHLEY

FILENAME
C-101.dwg

BC PROJECT NUMBER
157520

CLIENT PROJECT NUMBER

CIVIL

DILKON PASS PUMP STATION YARD PIPING PLAN

DRAWING NUMBER
C-101

SHEET NUMBER 15 OF 59

Path: C:\BCPW\D2344906 FILENAME: C-101.DWG PLOT DATE: 3/4/2022 4:21 PM CAD USER: TYLER.PRIDEMORE

PLAN

0 10 20
SCALE IN FEET

PLAN NORTH

GENERAL NOTES

1. ALL LOCATIONS OF UTILITIES SHOWN ARE APPROXIMATE. CONTRACTOR TO FIELD VERIFY AND POTHOLE AS REQUIRED TO COMPLETE THE WORK.
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5. CONTRACTOR TO INSTALL MARKER POST PER NTUA STD DWG WS-13.
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7. SEE V-001 FOR COORDINATE CONTROL INFORMATION.
8. ALL YARD PIPING TO HAVE MJ X MJ FITTINGS UNLESS NOTED OR OTHERWISE SHOWN IN DETAILS.

KEY NOTES

1	6" 90d BEND
2	CUT EXISTING WATER MAIN
3	6" DIA GATE VALVE PER NTUA STD DWG WS-14 AND SECTION 15102
4	5' MANHOLE W/ 4" CHECK VALVE AND TWO (2) REDUCERS. SEE DETAIL A / SHEET C-002
5	2" DIA DI PC 350 FLUSH LINE, SEE NTUA STD DWG WS-11
6	REMOVE EXISTING 6" PVC PIPE

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CONSTRUCTION ISSUE

NAVAJO TRIBAL UTILITY AUTHORITY NTUA UTILITIES FOR THE NAVAJO NATION

DILKON PASS PIPELINE AND PUMP STATION

REVISIONS

REV	DATE	DESCRIPTION

LINE IS 2 INCHES AT FULL SIZE

DESIGNED: C. WILLMORE
DRAWN: T. PRIDEMORE
CHECKED: C. WILLMORE
CHECKED: - -
APPROVED: S. BRENCHLEY
FILENAME C-110.dwg
BC PROJECT NUMBER 157520
CLIENT PROJECT NUMBER

CIVIL

CHECK VALVE SITE PLAN

DRAWING NUMBER
C-110

SHEET NUMBER 16 OF 59

Path: C:\BCPWD2344906 FILENAME: C-110.DWG PLOT DATE: 3/4/2022 4:22 PM CAD USER: TYLER PRIDEMORE

PLAN

0 500 100

SCALE IN FEET

PLAN NORTH

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NAVAJO TRIBAL UTILITY AUTHORITY · UTILITIES FOR THE NAVAJO NATION · NTUA

DILKON PASS PIPELINE AND PUMP STATION

REVISIONS

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DESIGNED:	C. WILLMORE
DRAWN:	T. PRIDEMORE
CHECKED:	C. WILLMORE
CHECKED:	- -
APPROVED:	S. BRENCHLEY

FILENAME
C-200.dwg

BC PROJECT NUMBER
157520

CLIENT PROJECT NUMBER

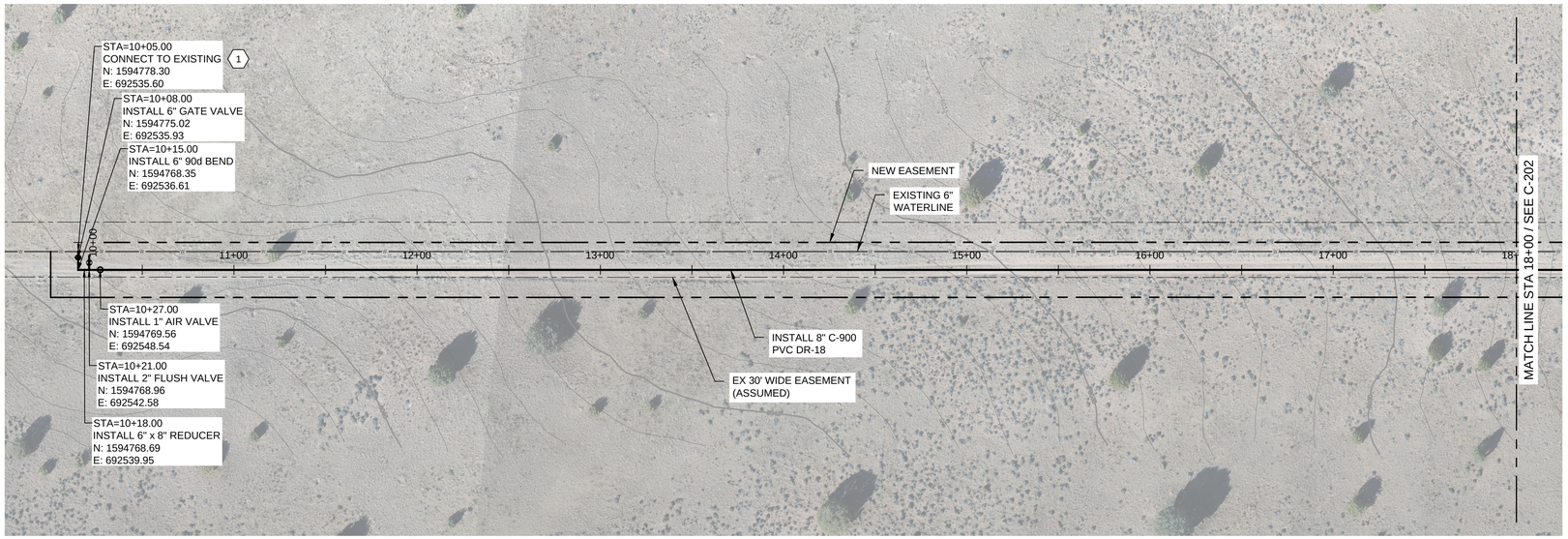
CIVIL

KEY MAP

DRAWING NUMBER
C-200

SHEET NUMBER 17 OF 59

Path: C:\USERS\TPRIDEMORE\ONEDRIVE - BROWN AND CALDWELL\DOCUMENTS\WORK\TEMP. CAD\NAVAJO NATION\DILKON PASS\EXPORT FILENAME: C-200.DWG PLOT DATE: 2/23/2022 5:48 PM CAD USER: TYLER PRIDEMORE



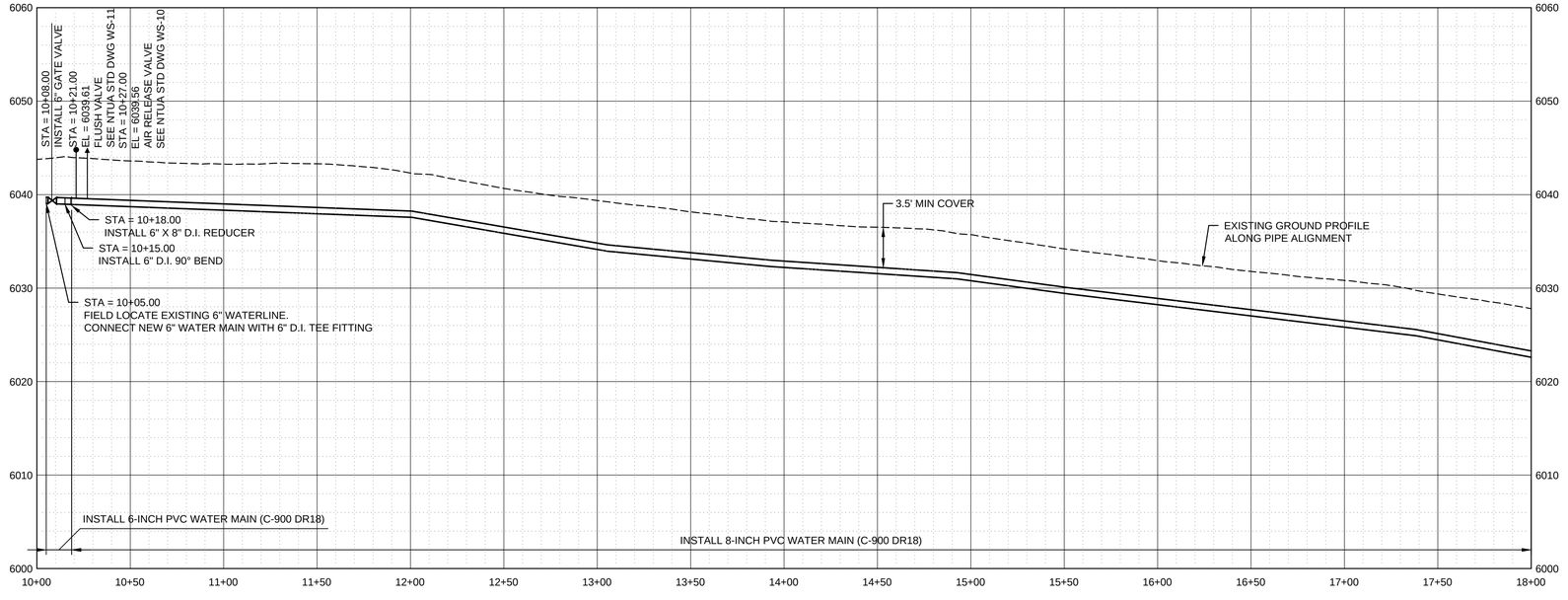
STA 10+00 - STA 18+00

PLAN

0 40 80

SCALE IN FEET

NORTH



PROFILE

SCALE H: 1" = 40'

V: 1" = 4'

GENERAL NOTES

1. ALL LOCATIONS OF UTILITIES SHOWN ARE APPROXIMATE, CONTRACTOR TO FIELD VERIFY AND POTHOLE AS REQUIRED TO COMPLETE THE WORK.
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3. CONTRACTOR TO PROVIDE THRUST BLOCKS AT ALL ELBOWS, TEES, CROSSES PER NTUA STD DWG WS-19. MECHANICAL JOINT RESTRAINTS CAN BE UTILIZED IN PLACE OF THRUST BLOCKS. EBA IRON MEGALUG SERIES 2000 PV FOR FITTINGS AND SERIES 2500 FOR PIPE JOINTS - INSTALL PER MANUFACTURE'S RECOMMENDATIONS.
4. CONTRACTOR TO INSTALL PIPE IN TRENCH PER DETAIL C / SHEET C-003.
5. CONTRACTOR TO INSTALL MARKER POSTS PER NTUA STD DWG WS-13.
6. EASEMENT DIMENSIONS AND PIPELINE OFFSETS ARE PROVIDED ON SHEET C-002.
7. DEFLECT PIPE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS AS NECESSARY.
8. ALL YARD PIPING TO HAVE MJ x MJ DI FITTINGS UNLESS NOTED OR OTHERWISE SHOWN IN DETAILS.

KEY NOTES

1 CAP EXISTING 6" WATERLINE EAST ONCE NEW 8" LINE AND PUMPHOUSE ARE APPROVED AND IN OPERATION.

Call at least two full working days before you begin excavation.

ARIZONA 811 Arizona Blue Stake, Inc.

Dial 8-1-1 or 1-800-STAKE-IT (782-5348)
In Maricopa County: (602) 263-1100

Brown AND Caldwell

SALT LAKE CITY, UT

CERTIFICATE NO. 36697 STEVEN BRENCHLEY Date Signed 5/1/2022 ARIZONA, U.S.A.

CONSTRUCTION ISSUE

NAVAJO TRIBAL UTILITY AUTHORITY · UTILITIES FOR THE NAVAJO NATION

DILKON PASS PIPELINE AND PUMP STATION

REVISIONS

REV	DATE	DESCRIPTION

LINE IS 2 INCHES AT FULL SIZE

DESIGNED: C. WILLMORE
DRAWN: T. PRIDEMORE
CHECKED: C. WILLMORE
CHECKED: -- -
APPROVED: S. BRENCHLEY

FILENAME
C-201.dwg

BC PROJECT NUMBER
157520

CLIENT PROJECT NUMBER

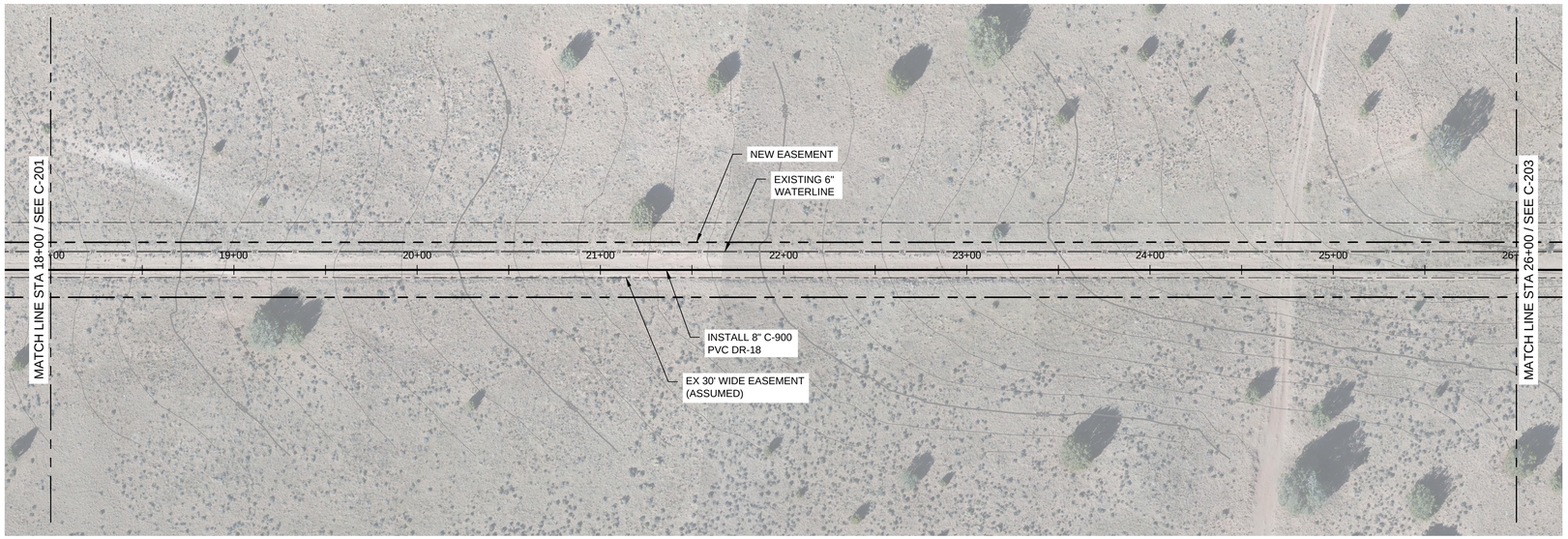
CIVIL

PLAN AND PROFILE - STA 10+00 TO 18+00

DRAWING NUMBER
C-201

SHEET NUMBER 18 OF 59

Path: C:\BCPWD\2344906 FILENAME: C-201.DWG PLOT DATE: 4/28/2022 2:31 PM CAD USER: TYLER PRIDEMORE



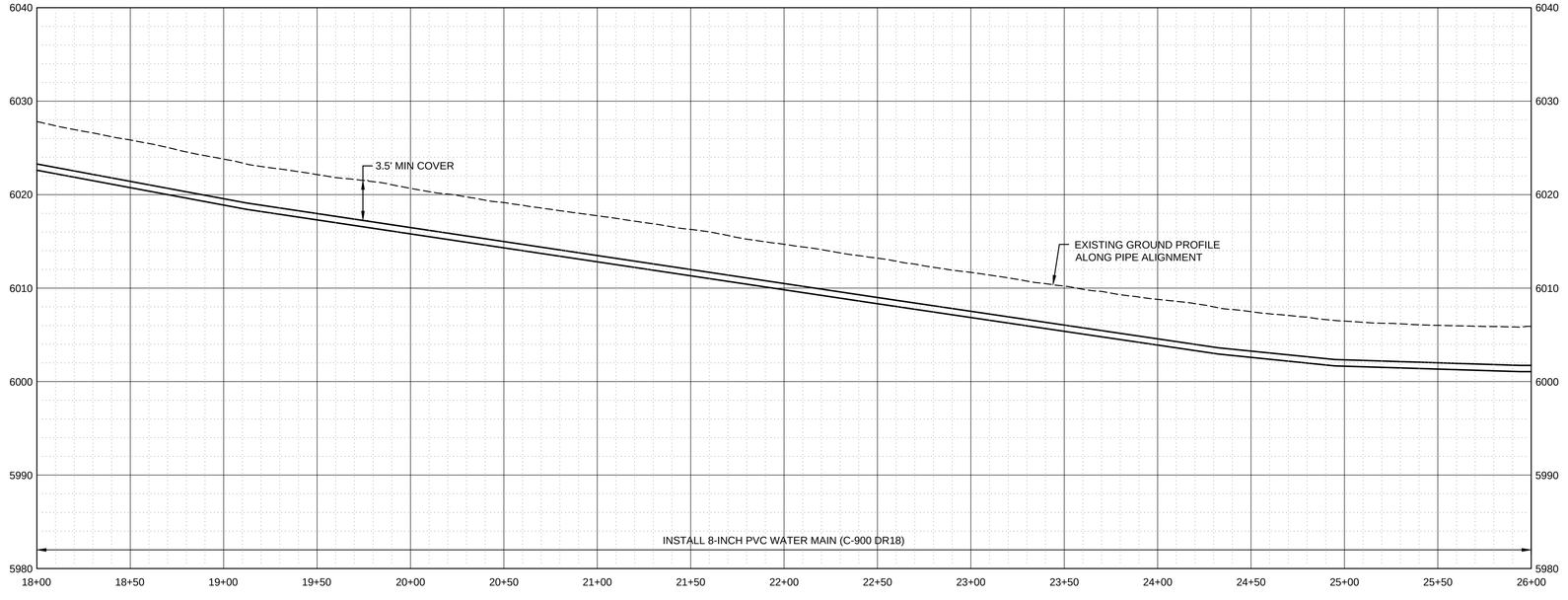
STA 18+00 - STA 26+00

PLAN

0 40 80

SCALE IN FEET

NORTH



PROFILE

SCALE H: 1" = 40'

V: 1" = 4'

GENERAL NOTES

1. ALL LOCATIONS OF UTILITIES SHOWN ARE APPROXIMATE, CONTRACTOR TO FIELD VERIFY AND POTHOLE AS REQUIRED TO COMPLETE THE WORK.
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3. CONTRACTOR TO PROVIDE THRUST BLOCKS AT ALL ELBOWS, TEES, CROSSES PER NTUA STD DWG WS-19. MECHANICAL JOINT RESTRAINTS CAN BE UTILIZED IN PLACE OF THRUST BLOCKS. EBA IRON MEGALUG SERIES 2000 PV FOR FITTINGS AND SERIES 2500 FOR PIPE JOINTS - INSTALL PER MANUFACTURE'S RECOMMENDATIONS.
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Brown AND Caldwell

SALT LAKE CITY, UT

CERTIFICATE NO. 36697 STEVEN BRENCHLEY Date Signed 5/1/2022 ARIZONA, U.S.A.

CONSTRUCTION ISSUE

NAVAJO TRIBAL UTILITY AUTHORITY NTUA UTILITIES FOR THE NAVAJO NATION

DILKON PASS PIPELINE AND PUMP STATION

REVISIONS

REV	DATE	DESCRIPTION

LINE IS 2 INCHES AT FULL SIZE

DESIGNED:	C. WILLMORE
DRAWN:	T. PRIDEMORE
CHECKED:	C. WILLMORE
CHECKED:	- -
APPROVED:	S. BRENCHLEY

FILENAME
C-202.dwg

BC PROJECT NUMBER
157520

CLIENT PROJECT NUMBER

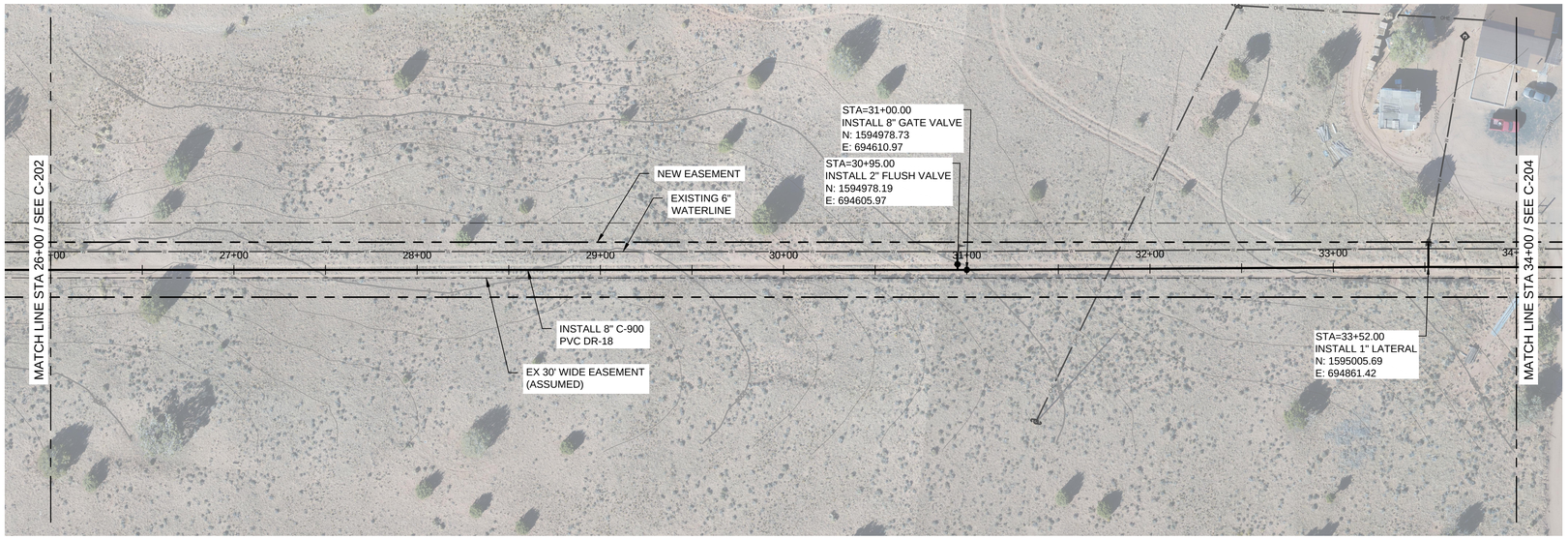
CIVIL

PLAN AND PROFILE - STA 18+00 TO 26+00

DRAWING NUMBER
C-202

SHEET NUMBER 19 OF 59

Path: C:\BCPWD2344906 FILENAME: C-202.DWG PLOT DATE: 4/28/2022 2:30 PM CAD USER: TYLER PRIDEMORE



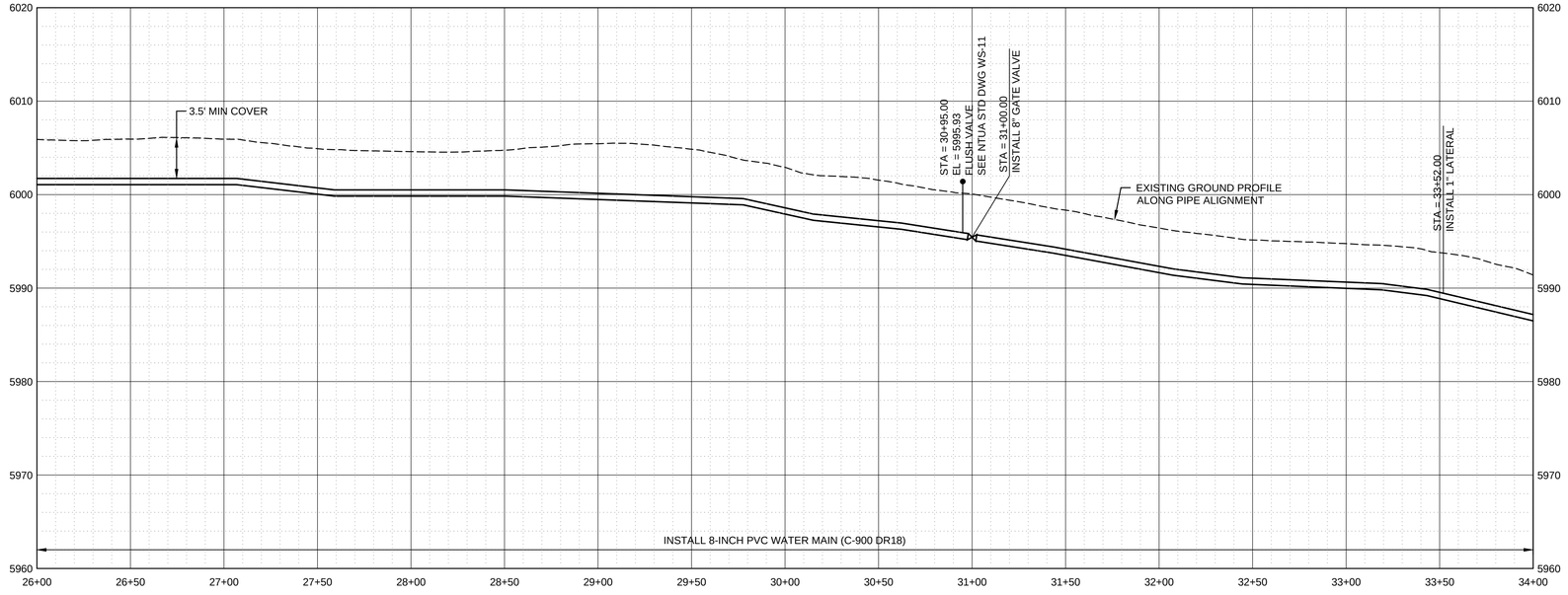
STA 26+00 - STA 34+00

PLAN

0 40 80

SCALE IN FEET

NORTH



PROFILE

SCALE H: 1" = 40'
V: 1" = 4'

GENERAL NOTES

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Brown AND Caldwell

SALT LAKE CITY, UT

CERTIFICATE NO. 36697 STEVEN BRENCHLEY Date Signed 5/1/2022 ARIZONA, U.S.A.

CONSTRUCTION ISSUE

NAVAJO TRIBAL UTILITY AUTHORITY NTUA UTILITIES FOR THE NAVAJO NATION

DILKON PASS PIPELINE AND PUMP STATION

REVISIONS

REV	DATE	DESCRIPTION

LINE IS 2 INCHES AT FULL SIZE

DESIGNED:	C. WILLMORE
DRAWN:	T. PRIDEMORE
CHECKED:	C. WILLMORE
CHECKED:	- -
APPROVED:	S. BRENCHLEY

FILENAME
C-203.dwg

BC PROJECT NUMBER
157520

CLIENT PROJECT NUMBER

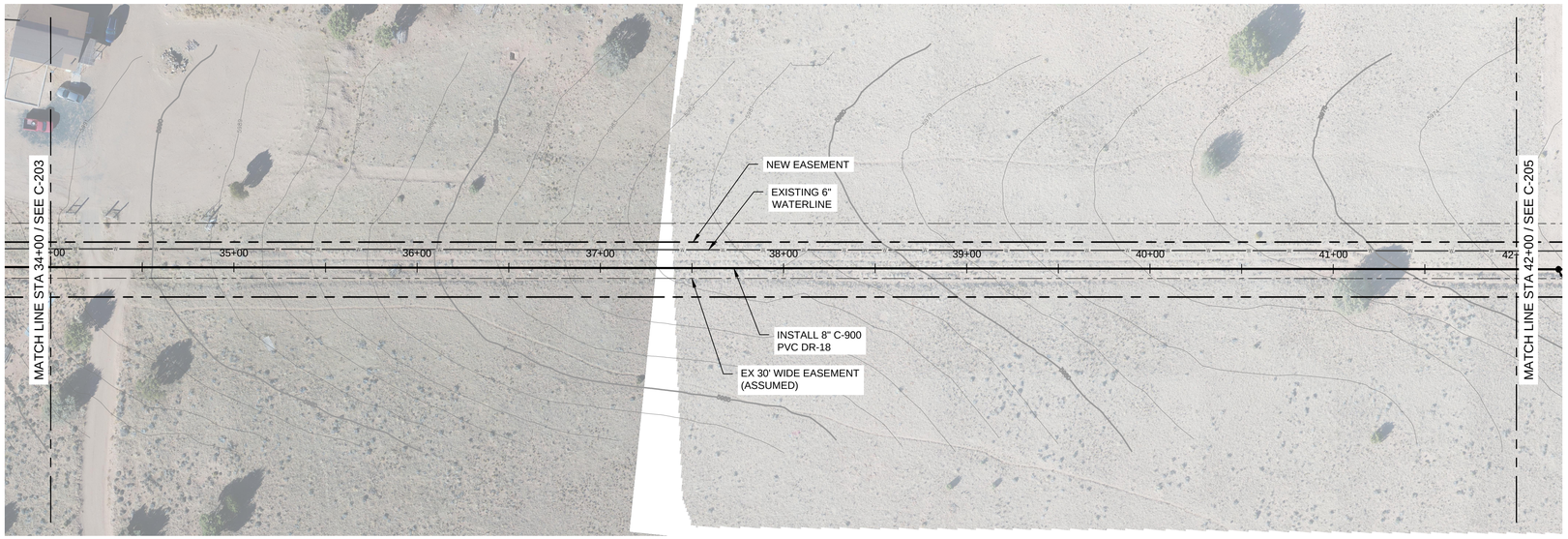
CIVIL

PLAN AND PROFILE - STA 26+00 TO 34+00

DRAWING NUMBER
C-203

SHEET NUMBER 20 OF 59

Path: C:\BCPWD2344906 FILENAME: C-203.DWG PLOT DATE: 4/28/2022 2:32 PM CAD USER: TYLER PRIDEMORE



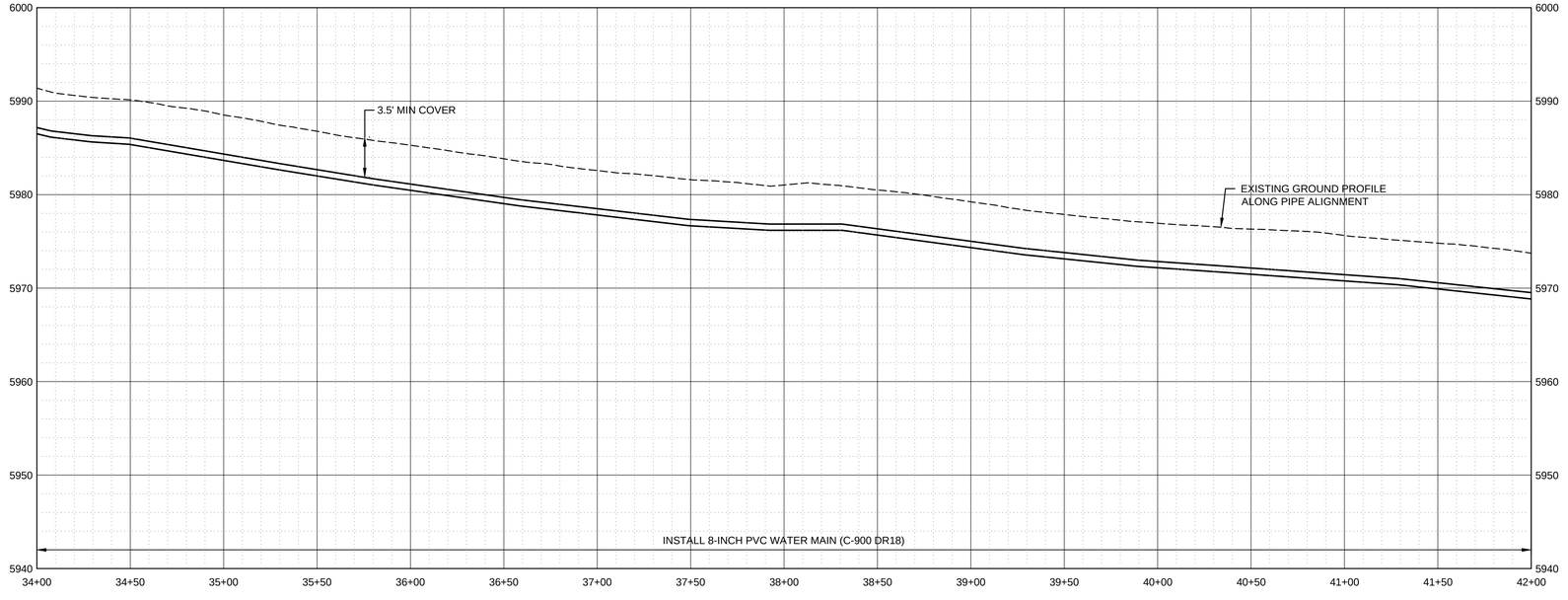
STA 34+00 - STA 42+00

PLAN

0 40 80

SCALE IN FEET

NORTH



PROFILE

SCALE H: 1" = 40'

V: 1" = 4'

GENERAL NOTES

1. ALL LOCATIONS OF UTILITIES SHOWN ARE APPROXIMATE, CONTRACTOR TO FIELD VERIFY AND POTHOLE AS REQUIRED TO COMPLETE THE WORK.
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Call at least two full working days before you begin excavation.

ARIZONA 811 Arizona Blue Stake, Inc.

Dial 8-1-1 or 1-800-STAKE-IT (782-5348)
In Maricopa County: (602) 263-1100

Brown AND Caldwell

SALT LAKE CITY, UT

CERTIFICATE NO. 36697 STEVEN BRENCHLEY Date Signed 5/1/2022 ARIZONA, U.S.A.

CONSTRUCTION ISSUE

NAVAJO TRIBAL UTILITY AUTHORITY NTUA UTILITIES FOR THE NAVAJO NATION

DILKON PASS PIPELINE AND PUMP STATION

REVISIONS

REV	DATE	DESCRIPTION

LINE IS 2 INCHES AT FULL SIZE

DESIGNED:	C. WILLMORE
DRAWN:	T. PRIDEMORE
CHECKED:	C. WILLMORE
CHECKED:	- -
APPROVED:	S. BRENCHLEY

FILENAME
C-204.dwg

BC PROJECT NUMBER
157520

CLIENT PROJECT NUMBER

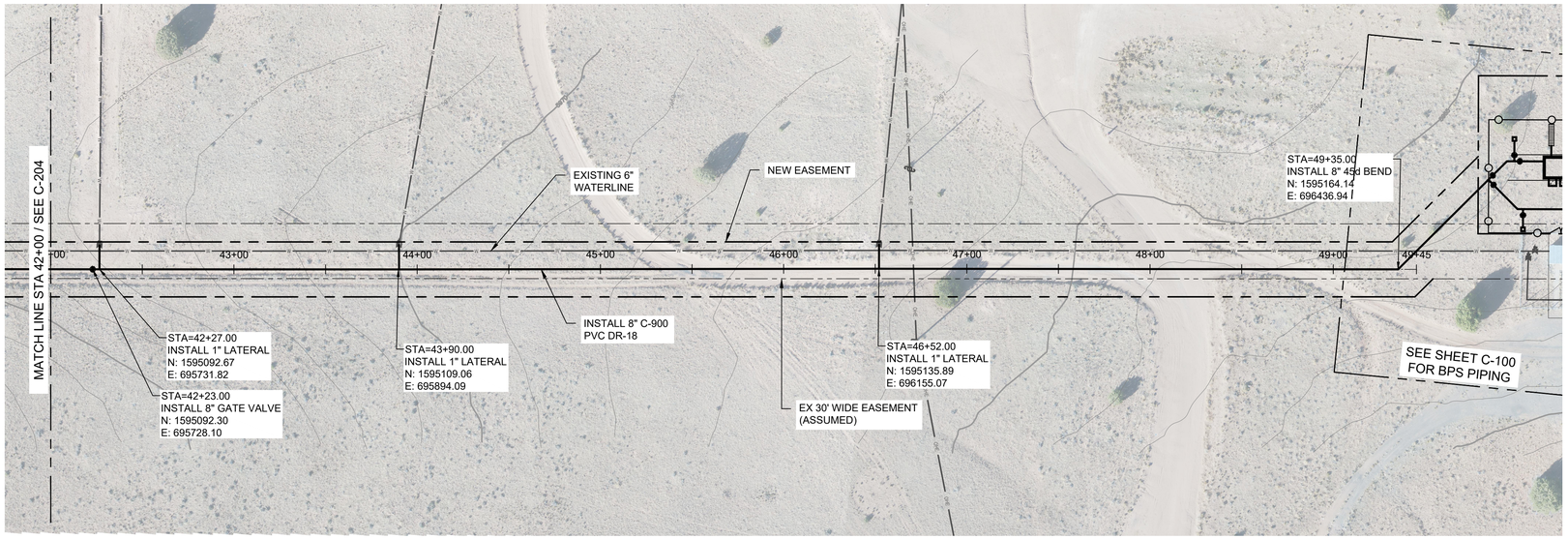
CIVIL

PLAN AND PROFILE - STA 34+00 TO 42+00

DRAWING NUMBER
C-204

SHEET NUMBER 21 OF 59

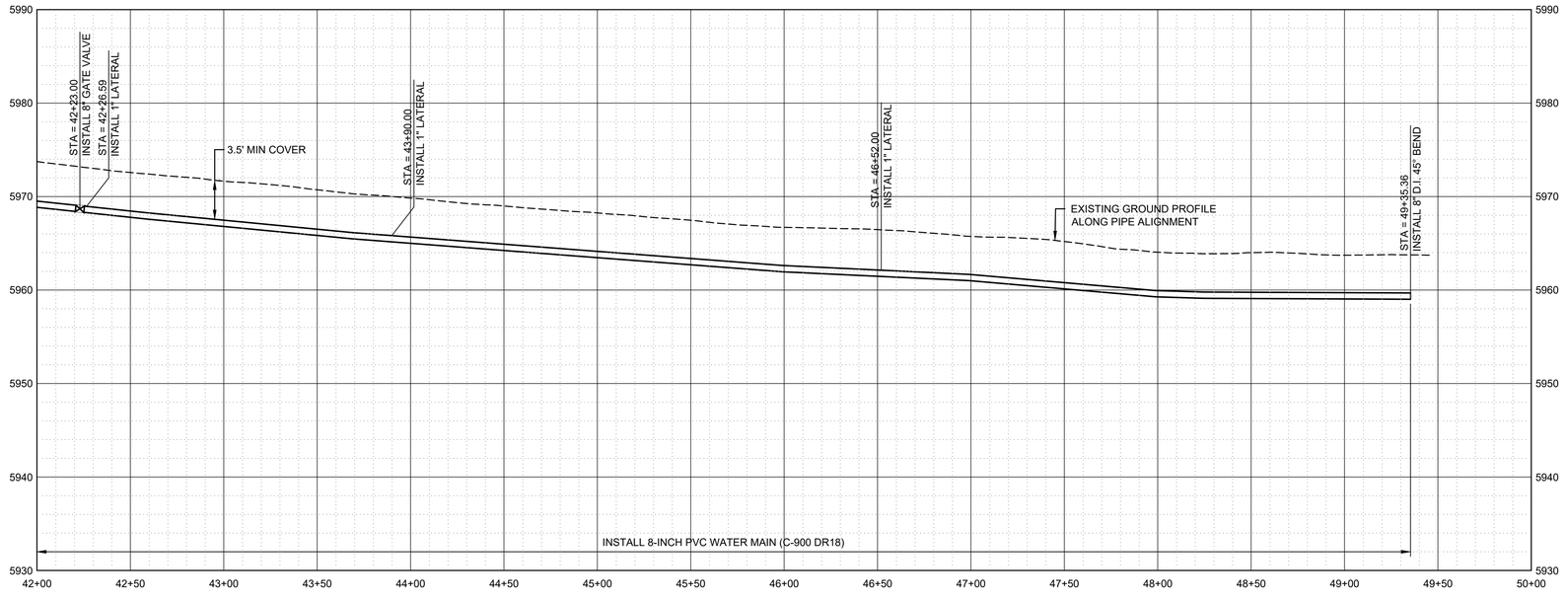
Path: C:\BCPWD\2344906 FILENAME: C-204.DWG PLOT DATE: 4/28/2022 2:32 PM CAD USER: TYLER PRIDEMORE



STA 42+00 - STA 49+45
PLAN

0 40 80
SCALE IN FEET

NORTH



PROFILE
SCALE H: 1" = 40'
V: 1" = 4'

GENERAL NOTES

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ARIZONA 811 Arizona Blue Stake, Inc.
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Brown AND Caldwell
SALT LAKE CITY, UT

CERTIFICATE NO. 36697 STEVEN BRENCHLEY Date Signed 3/3/2022 ARIZONA, U.S.A.

CONSTRUCTION ISSUE

NAVAJO TRIBAL UTILITY AUTHORITY · NTUA · UTILITIES FOR THE NAVAJO NATION

DILKON PASS PIPELINE AND PUMP STATION

REVISIONS

REV	DATE	DESCRIPTION

LINE IS 2 INCHES AT FULL SIZE

DESIGNED:	C. WILLMORE
DRAWN:	T. PRIDEMORE
CHECKED:	C. WILLMORE
CHECKED:	- -
APPROVED:	S. BRENCHLEY

FILENAME
C-205.dwg
BC PROJECT NUMBER
157520
CLIENT PROJECT NUMBER

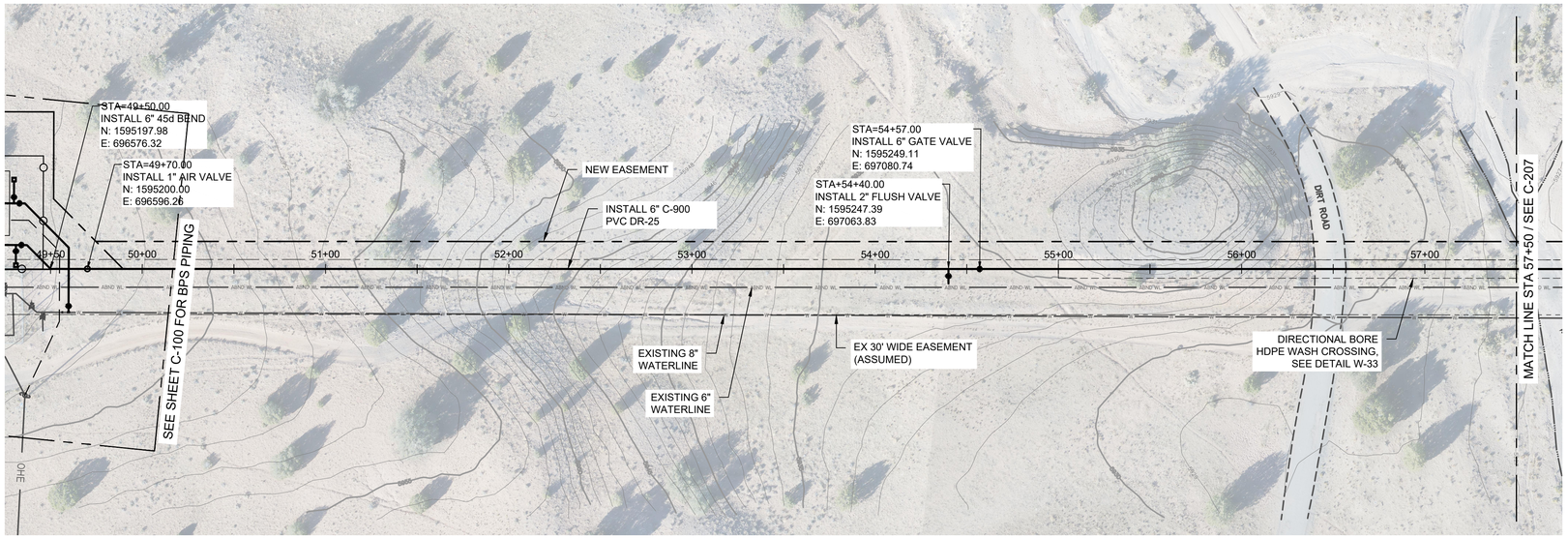
CIVIL

PLAN AND PROFILE - STA 42+00 TO 49+45

DRAWING NUMBER
C-205

SHEET NUMBER 22 OF 59

Path: C:\USERS\TPRIDEMORE\ONEDRIVE - BROWN AND CALDWELL\DOCUMENTS\WORK\TEMP. CAD\NAVAJO NATION\DILKON PASS\EXPORT FILENAME: C-205.DWG PLOT DATE: 2/23/2022 5:49 PM CAD USER: TYLER PRIDEMORE



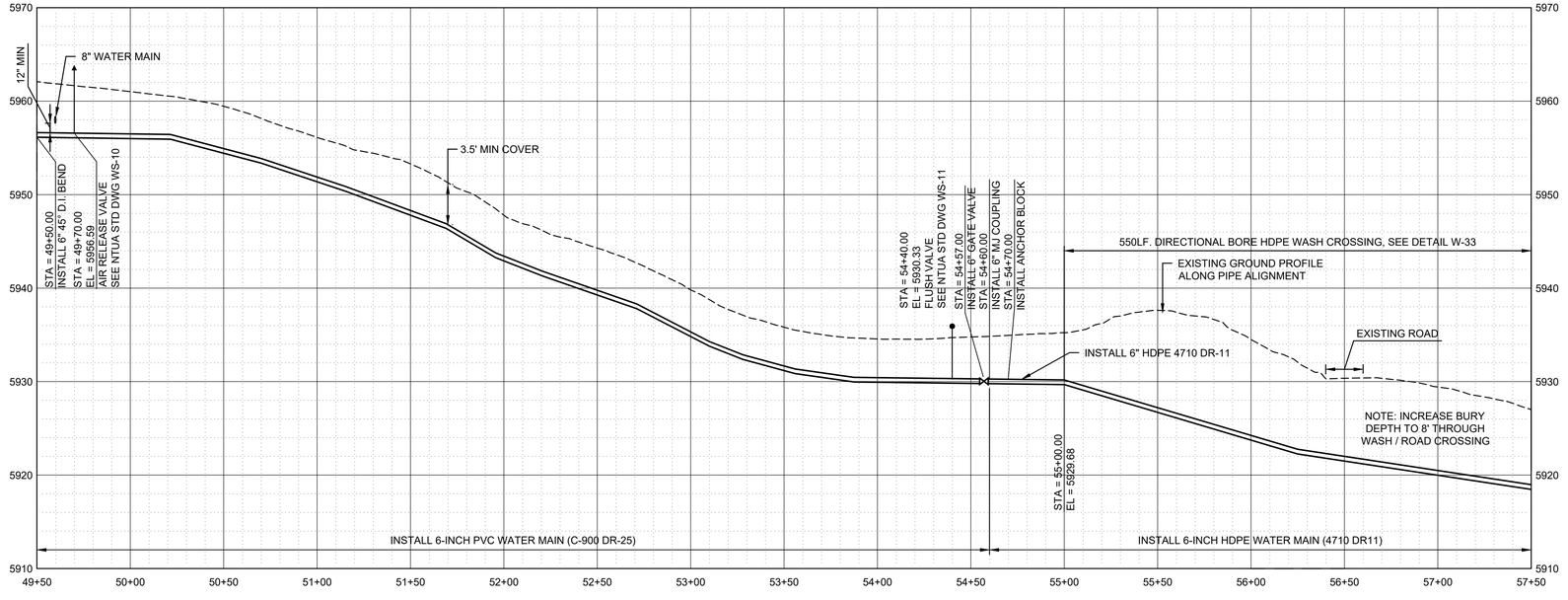
STA 49+50 - STA 57+50

PLAN

0 40 80

SCALE IN FEET

NORTH



PROFILE

SCALE H: 1" = 40'

V: 1" = 4'

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Brown AND Caldwell

SALT LAKE CITY, UT

CERTIFICATE NO. 36697 STEVEN BRENCHLEY Date Signed 3/3/2022 ARIZONA, U.S.A.

CONSTRUCTION ISSUE

NAVAJO TRIBAL UTILITY AUTHORITY NTUA UTILITIES FOR THE NAVAJO NATION

DILKON PASS PIPELINE AND PUMP STATION

REVISIONS

REV	DATE	DESCRIPTION

LINE IS 2 INCHES AT FULL SIZE

DESIGNED:	C. WILLMORE
DRAWN:	T. PRIDEMORE
CHECKED:	C. WILLMORE
CHECKED:	- -
APPROVED:	S. BRENCHLEY

FILENAME
C-206.dwg

BC PROJECT NUMBER
157520

CLIENT PROJECT NUMBER

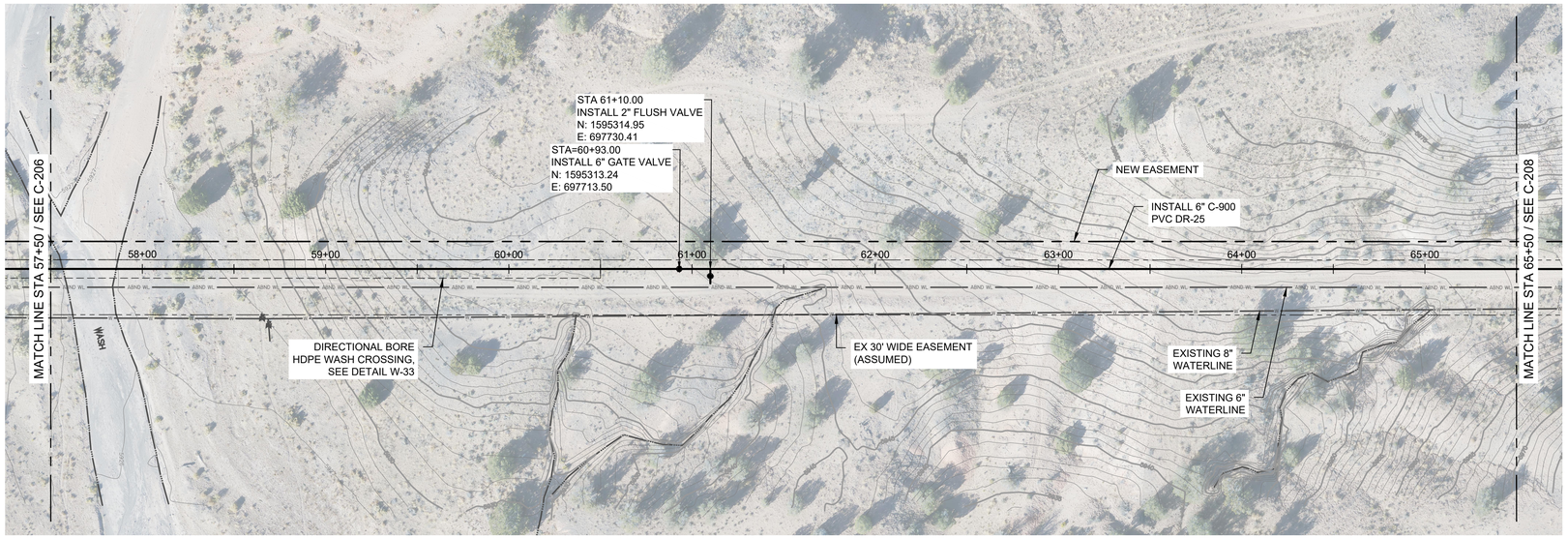
CIVIL

PLAN AND PROFILE - STA 49+50 TO 57+50

DRAWING NUMBER
C-206

SHEET NUMBER 23 OF 59

Path: C:\BCPW\D2344906 FILENAME: C-206.DWG PLOT DATE: 2/24/2022 12:30 PM CAD USER: TYLER PRIDEMORE



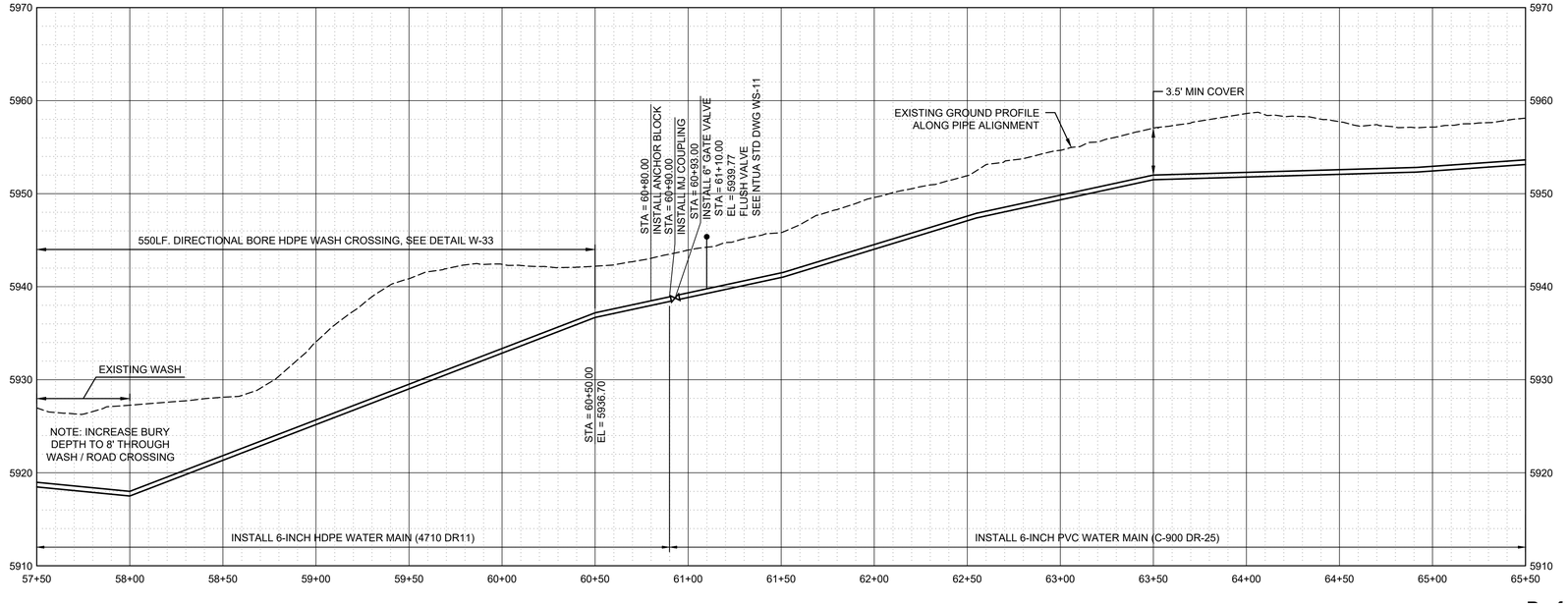
STA 57+50 - STA 65+50

PLAN

0 40 80

SCALE IN FEET

NORTH



PROFILE

SCALE H: 1" = 40'
V: 1" = 4'

GENERAL NOTES

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Brown AND Caldwell

SALT LAKE CITY, UT

CERTIFICATE NO. 36697 STEVEN BRENCHLEY Date Signed 1/13/2022 ARIZONA, U.S.A.

CONSTRUCTION ISSUE

NAVAJO TRIBAL UTILITY AUTHORITY NTUA UTILITIES FOR THE NAVAJO NATION

DILKON PASS PIPELINE AND PUMP STATION

REVISIONS

REV	DATE	DESCRIPTION

LINE IS 2 INCHES AT FULL SIZE

DESIGNED:	C. WILLMORE
DRAWN:	T. PRIDEMORE
CHECKED:	C. WILLMORE
CHECKED:	- -
APPROVED:	S. BRENCHLEY

FILENAME
C-207.dwg

BC PROJECT NUMBER
157520

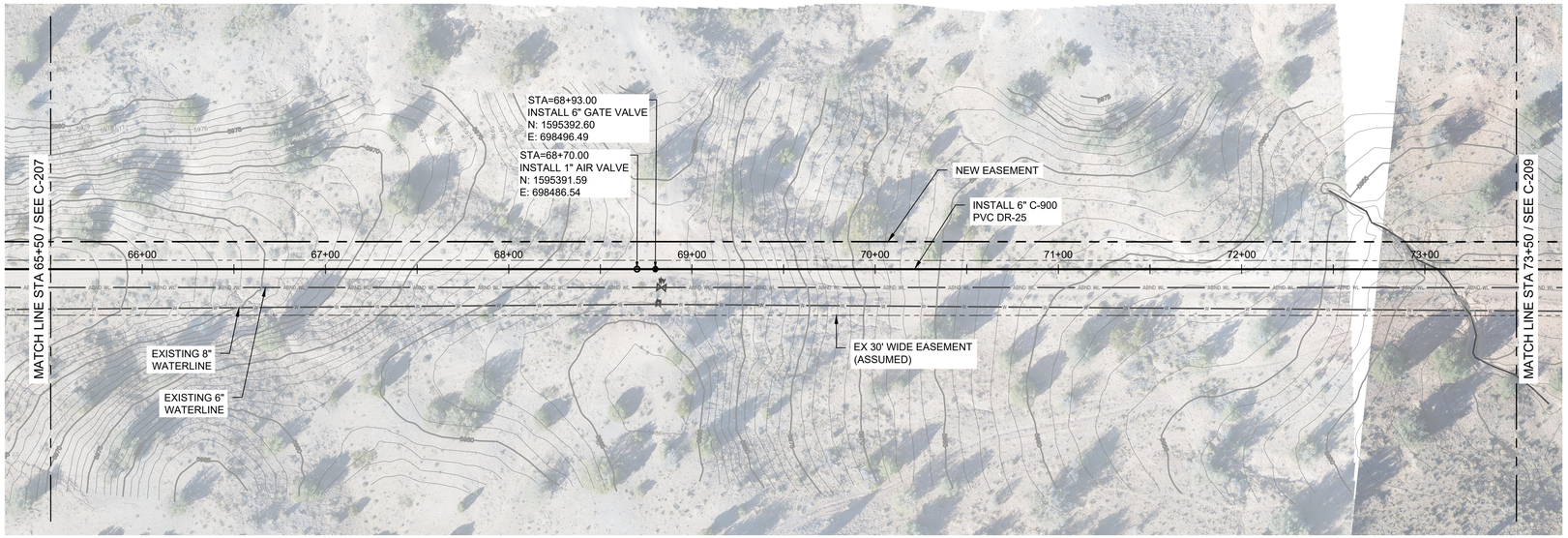
CLIENT PROJECT NUMBER

CIVIL

PLAN AND PROFILE - STA 57+50 TO 65+50

DRAWING NUMBER
C-207

SHEET NUMBER 24 OF 59



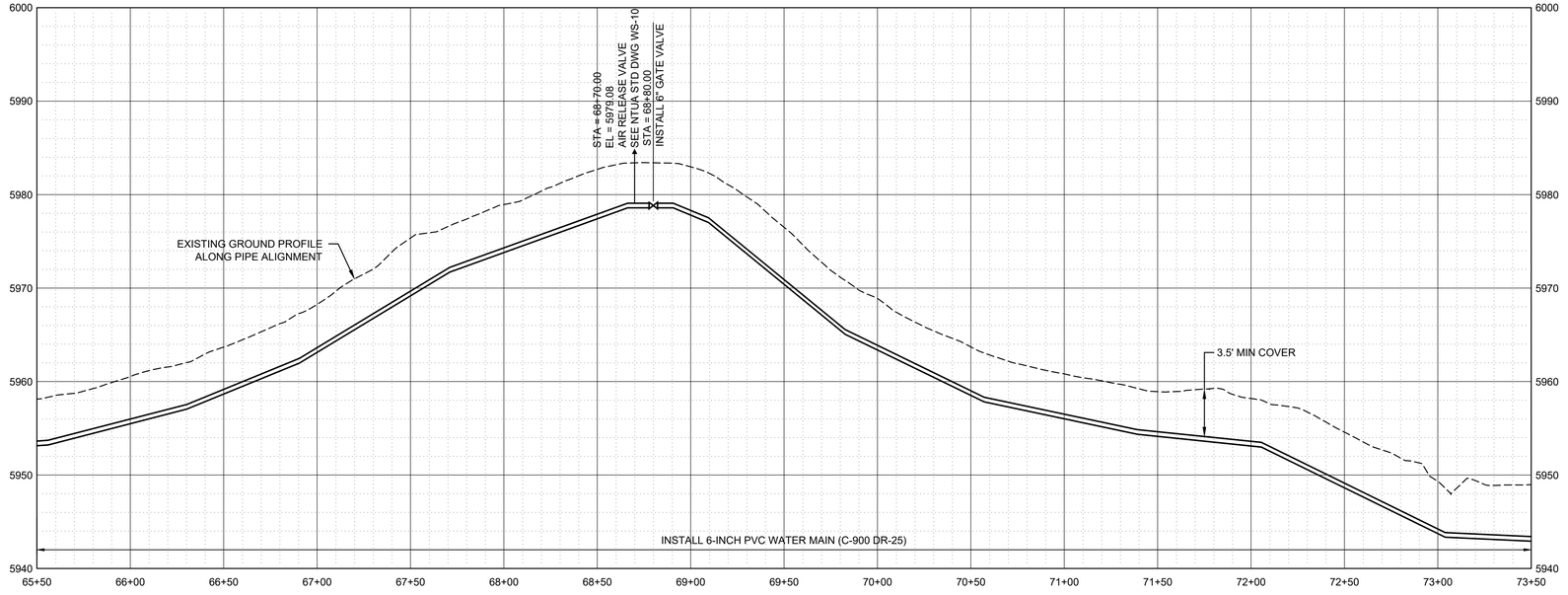
STA 65+50 - STA 73+50

PLAN

0 40 80

SCALE IN FEET

NORTH



PROFILE

SCALE H: 1" = 40'

V: 1" = 4'

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Brown AND Caldwell

SALT LAKE CITY, UT

CERTIFICATE NO. 36697 STEVEN BRENCHLEY Date Signed 3/3/2022 ARIZONA, U.S.A.

CONSTRUCTION ISSUE

NAVAJO TRIBAL UTILITY AUTHORITY NTUA UTILITIES FOR THE NAVAJO NATION

DILKON PASS PIPELINE AND PUMP STATION

REVISIONS

REV	DATE	DESCRIPTION

LINE IS 2 INCHES AT FULL SIZE

DESIGNED:	C. WILLMORE
DRAWN:	T. PRIDEMORE
CHECKED:	C. WILLMORE
CHECKED:	- -
APPROVED:	S. BRENCHLEY

FILENAME
C-208.dwg

BC PROJECT NUMBER
157520

CLIENT PROJECT NUMBER

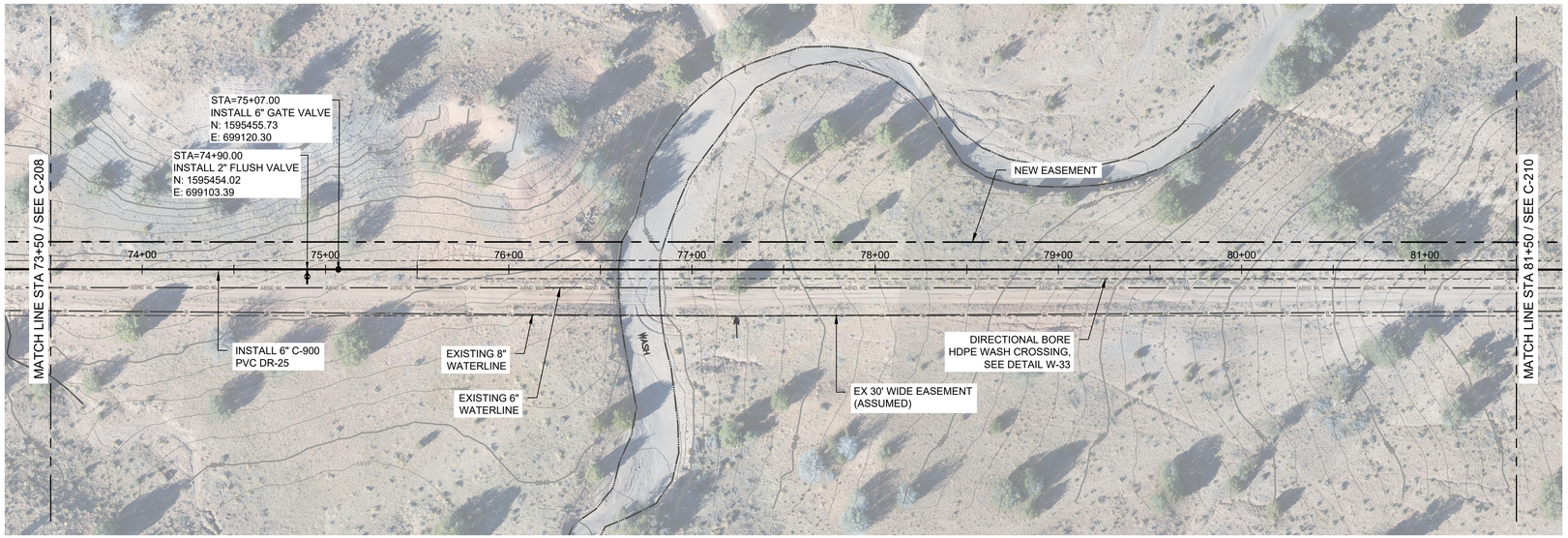
CIVIL

PLAN AND PROFILE - STA 65+50 TO 73+50

DRAWING NUMBER
C-208

SHEET NUMBER 25 OF 59

Path: C:\BGPWD\2344906 FILENAME: C-208.DWG PLOT DATE: 2/24/2022 12:34 PM CAD USER: TYLER PRIDEMORE



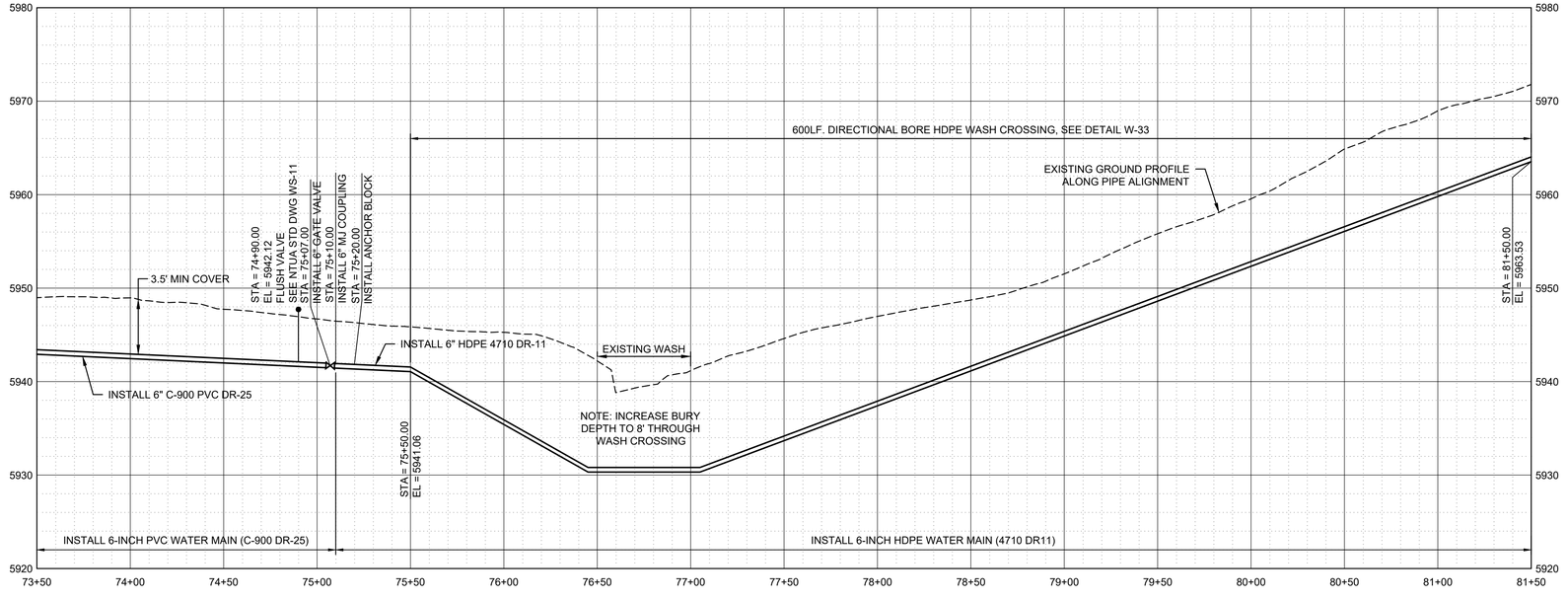
STA 73+50 - STA 81+50

PLAN

0 40 80

SCALE IN FEET

NORTH



PROFILE

SCALE H: 1" = 40'
V: 1" = 4'

GENERAL NOTES

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Brown AND Caldwell

SALT LAKE CITY, UT

CERTIFICATE NO. 36697 STEVEN BRENCHLEY Date Signed 3/3/2022 ARIZONA, U.S.A.

CONSTRUCTION ISSUE

NAVAJO TRIBAL UTILITY AUTHORITY NTUA UTILITIES FOR THE NAVAJO NATION

DILKON PASS PIPELINE AND PUMP STATION

REVISIONS

REV	DATE	DESCRIPTION

LINE IS 2 INCHES AT FULL SIZE

DESIGNED: C. WILLMORE
DRAWN: T. PRIDEMORE
CHECKED: C. WILLMORE
CHECKED: - -
APPROVED: S. BRENCHLEY
FILENAME C-209.dwg
BC PROJECT NUMBER 157520
CLIENT PROJECT NUMBER

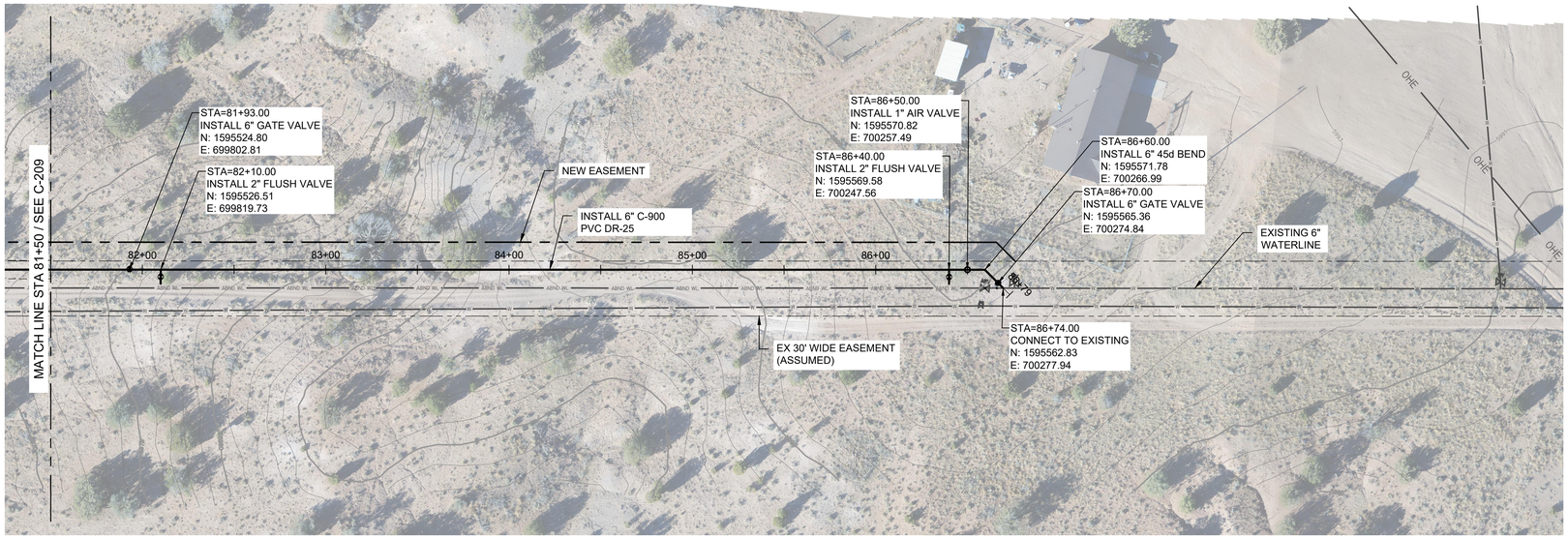
CIVIL

PLAN AND PROFILE - STA 73+50 TO 81+50

DRAWING NUMBER
C-209

SHEET NUMBER 26 OF 59

Path: C:\BCPW\D2344906 FILENAME: C-209.DWG PLOT DATE: 2/24/2022 12:40 PM CAD USER: TYLER.PRIDEMORE



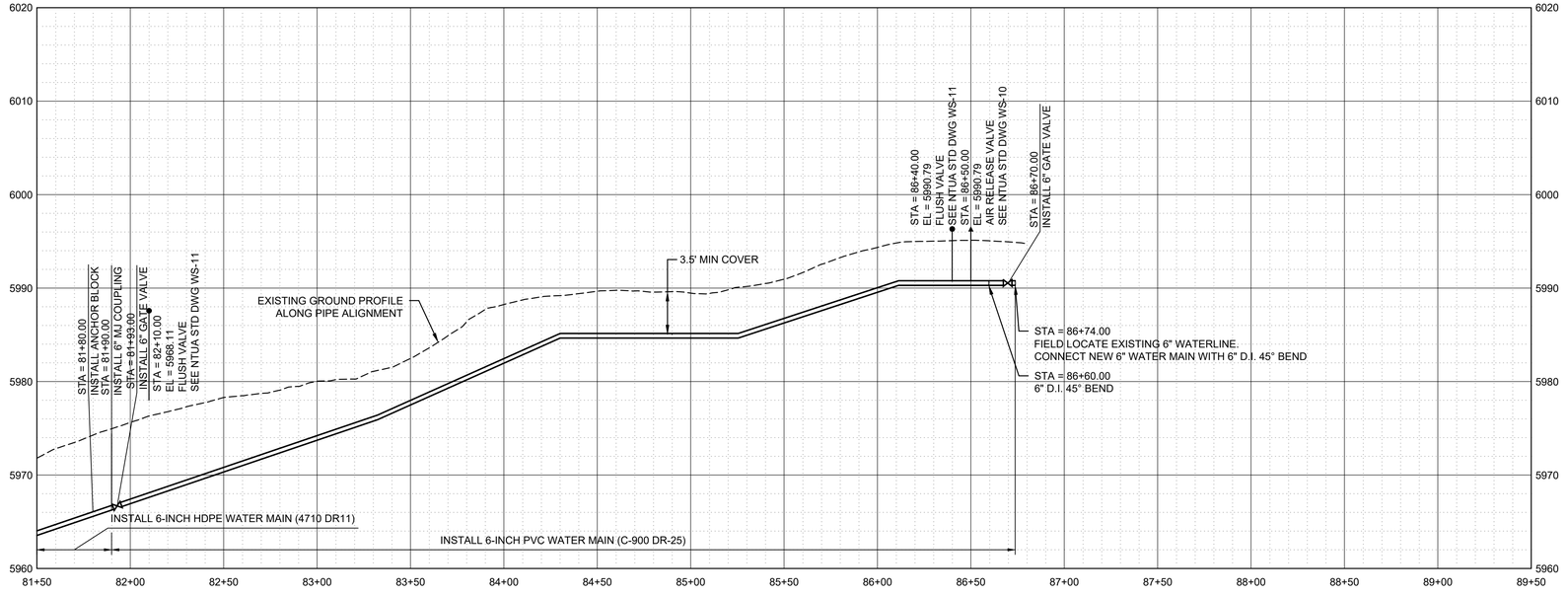
STA 81+50 - STA 86+79

PLAN

0 40 80

SCALE IN FEET

NORTH



PROFILE

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V: 1" = 4'

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KEY NOTES

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Brown AND Caldwell

SALT LAKE CITY, UT

CERTIFICATE NO. 36697 STEVEN BRENCHLEY Date Signed 3/3/2022 ARIZONA, U.S.A.

CONSTRUCTION ISSUE

NAVAJO TRIBAL UTILITY AUTHORITY NTUA UTILITIES FOR THE NAVAJO NATION

DILKON PASS PIPELINE AND PUMP STATION

REVISIONS

REV	DATE	DESCRIPTION

LINE IS 2 INCHES AT FULL SIZE

DESIGNED: C. WILLMORE
DRAWN: T. PRIDEMORE
CHECKED: C. WILLMORE
CHECKED: - -
APPROVED: S. BRENCHLEY
FILENAME C-210.dwg
BC PROJECT NUMBER 157520
CLIENT PROJECT NUMBER

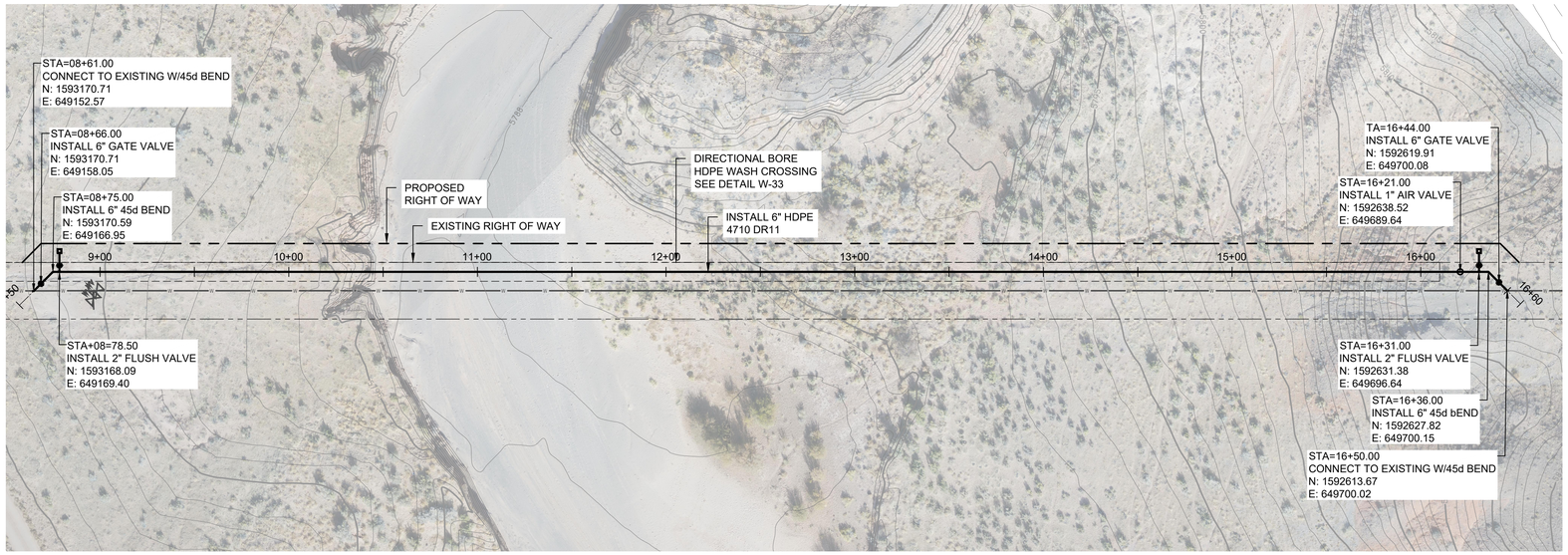
CIVIL

PLAN AND PROFILE - STA 81+50 TO 89+79

DRAWING NUMBER
C-210

SHEET NUMBER 27 OF 59

Path: C:\BCPW\D2344906 FILENAME: C-210.DWG PLOT DATE: 2/24/2022 1:05 PM CAD USER: TYLER PRIDEMORE



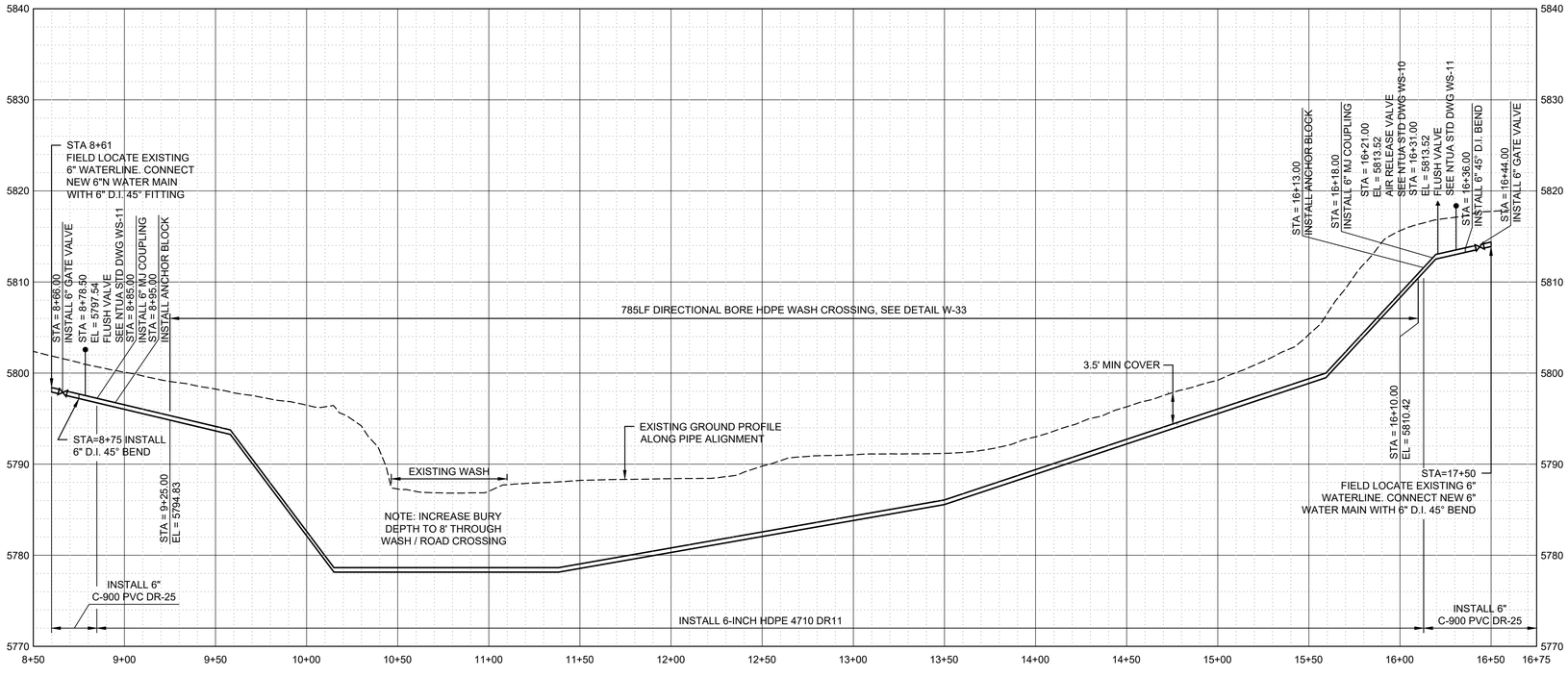
STA 10+00 - STA 17+00

PLAN

0 40 80

SCALE IN FEET

NORTH



PROFILE

SCALE H: 1" = 40'
V: 1" = 4'

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SALT LAKE CITY, UT

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CONSTRUCTION ISSUE

NAVAJO TRIBAL UTILITY AUTHORITY NTUA UTILITIES FOR THE NAVAJO NATION

DILKON PASS PIPELINE AND PUMP STATION

REVISIONS

REV	DATE	DESCRIPTION

LINE IS 2 INCHES AT FULL SIZE

DESIGNED: C. WILLMORE
DRAWN: T. PRIDEMORE
CHECKED: C. WILLMORE
CHECKED: - -
APPROVED: S. BRENCHLEY
FILENAME C-211.dwg
BC PROJECT NUMBER 157520
CLIENT PROJECT NUMBER

CIVIL

PLAN AND PROFILE - COYOTE WASH

DRAWING NUMBER C-211

SHEET NUMBER 28 OF 59

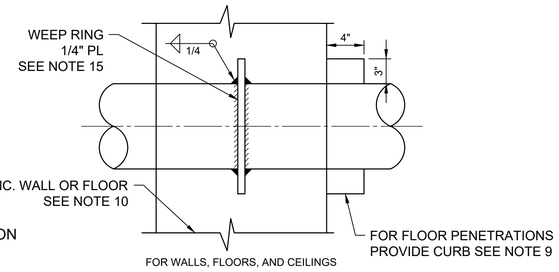
Path: C:\BCPW\D2344906 FILENAME: C-211.DWG PLOT DATE: 3/8/2022 9:30 AM CAD USER: TYLER PRIDEMORE

PIPE PENETRATION NOTES:

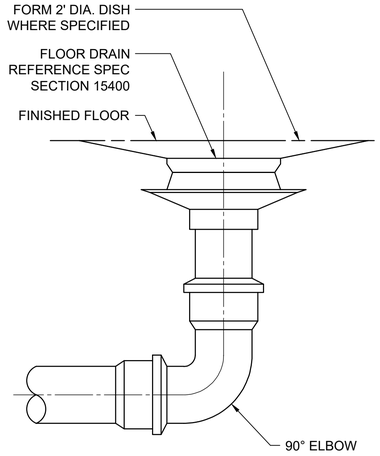
1. WHERE PIPES PASS THROUGH WALLS, FLOORS, OR CEILINGS, PENETRATIONS SHALL CONFORM TO TABLE, EXCEPT AS OTHERWISE SPECIFIED.
2. IN TABLE, "TANK" SHALL MEAN ANY PART OF A STRUCTURE CONTAINING LIQUID, OR IN CONTACT WITH THE EARTH.
3. IN TABLE, "PASSAGE" SHALL MEAN ANY ROOM, GALLERY, TUNNEL, OR SIMILAR ENCLOSURE.
4. IN TABLE, WATER SURFACE "WS" SHALL MEAN AN ELEVATION 9-INCHES ABOVE MAXIMUM WATER SURFACE SHOWN.
5. ALL STEEL SLEEVES SHALL BE HOT DIPPED GALVANIZED AFTER FABRICATION.
6. IN CONDITION 5, PENETRATION TYPE E,H,J, OR K SHALL BE USED WHERE ONE SIDE IS DESIGNATED AS HAZARDOUS (CLASSIFIED), WHERE FLOODING IS POSSIBLE, OR WHERE SPECIFIED.
7. SEAL FLANGES SHALL BE FACED AND DRILLED TO 150 POUND STANDARD. EACH JOINT SHALL BE FULL FACE GASKETED.
8. WHERE SPECIFIED, CAST IRON FLANGES MAY BE INSTALLED FLUSH WITH WALL AND TAPPED FOR STUDS.
9. PROVIDE CURB WHERE PENETRATING FLOOR, EXCEPT FOR PENETRATION TYPES A AND C. CURB SHALL BE 4" HIGH BY 3" WIDE.
10. PROVIDE A MINIMUM OF 3" CLEARANCE BETWEEN REINFORCING STEEL AND FERROUS METAL PENETRATIONS.
11. FLEXIBLE JOINTS SHALL BE PROVIDED FOR UNDERGROUND PIPING AS SPECIFIED.
12. RESTRAINED FLEXIBLE COUPLINGS FOR STEEL PIPE SHALL BE DESIGNED FOR 100 PSI LINE PRESSURE IN ACCORDANCE WITH AWWA MANUAL MII, FIGURES 19.15 AND 19.16. AWWA MANUAL M11, TABLE 19.7 SHALL BE UTILIZED.
13. UNLESS OTHERWISE SPECIFIED, INSULATION SHALL NOT EXTEND THROUGH SLEEVES. CHILLED WATER MUST PENETRATE WITH INSULATION.
14. WHERE CAST IRON PIPE IS EMBEDDED IN CONCRETE AT AN EXPANSION JOINT, USE TYPE L PENETRATION.
15. WEEP RINGS SHALL HAVE A MINIMUM DIAMETER 3-INCHES GREATER THAN THE OUTSIDE PIPE DIAMETER.
16. "TANK SIDE OF WALL" SHALL MEAN SIDE OF WALL NORMALLY EXPOSED TO LIQUID, EARTH, OR OUTSIDE ATMOSPHERE.
17. SEAL WITH MASTIC SEALANT WHERE WALL IS EXPOSED TO LIQUID, EARTH, OR A HAZARDOUS (CLASSIFIED) AREA.

PIPE PENETRATION TYPES

	CONDITION		TYPE		
	FROM	TO	STEEL PIPE	CAST IRON	PLASTIC PIPE
1	TANK	TANK BELOW W.S.	E, H OR K	E, F, G OR J	E
2	TANK	TANK ABOVE W.S.	D OR E	D OR E	D OR E
3	PASSAGE	TANK BELOW W.S.	E, H OR K	E, F, G OR J	E
4	PASSAGE	TANK ABOVE W.S.	A, C, D OR E	A, C, D OR E	A, C, D OR E
5	PASSAGE	PASSAGE	B OR C SEE NOTE 6	B OR C SEE NOTE 6	B OR C SEE NOTE 6
6	PASSAGE	OUTSIDE WALL	D OR E	D OR E	D OR E
7	PASSAGE	ROOF	AS SHOWN		
8	TANK	OUTSIDE WALL	E OR F	E, F OR G	E



TYPE K PIPE PENETRATION
TYPICAL
DETAIL M1110
NO SCALE



TYPE II FLOOR DRAIN
TYPICAL
DETAIL M4202
NO SCALE

Brown AND Caldwell
SALT LAKE CITY, UT

CERTIFICATE NO.
36697
STEVEN
BRENCHLEY
Date Signed 3/3/2022
ARIZONA, U.S.A.

CONSTRUCTION ISSUE

NAVAJO TRIBAL UTILITY AUTHORITY
UTILITIES FOR THE NAVAJO NATION

DILKON PASS PIPELINE AND PUMP STATION

REVISIONS

REV	DATE	DESCRIPTION

LINE IS 2 INCHES
AT FULL SIZE

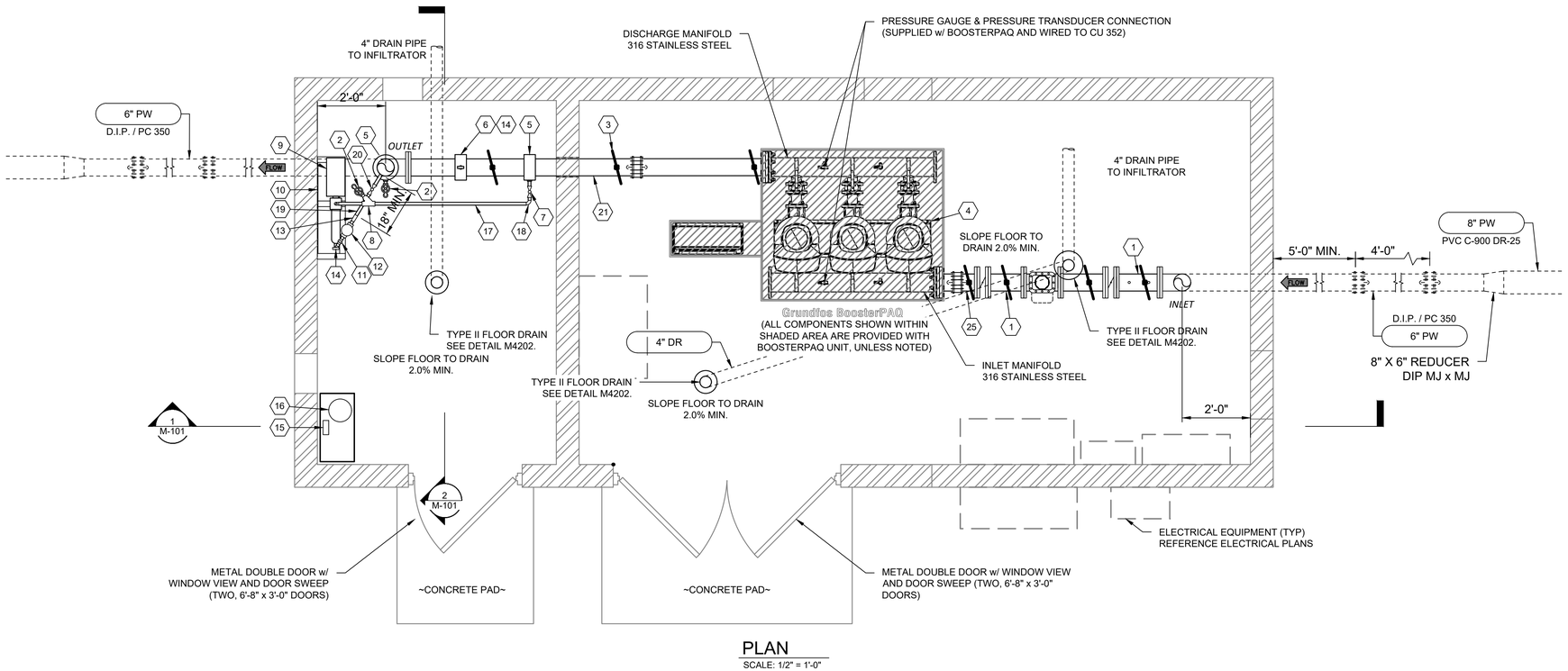
DESIGNED: C. WILLMORE
DRAWN: T. PRIDEMORE
CHECKED: C. WILLMORE
CHECKED: - -
APPROVED: S. BRENCHLEY
FILENAME
M-003.dwg
BC PROJECT NUMBER
157520
CLIENT PROJECT NUMBER

PROCESS

STANDARD DETAILS

DRAWING NUMBER
M-001

SHEET NUMBER 29 OF 59



PLAN

SCALE: 1/2" = 1'-0"

GENERAL NOTES

1. BOOSTER STATION PIPING DIAMETER VARIES TO FACILITATE: 1) MATCHING MANIFOLD DIAMETER SIZE; 2) DESIGN FLOW OF BOOSTER STATION; 3) AND MAXIMUM ELECTROMAGNETIC METER VELOCITY LIMITS.

KEY NOTES

1	6" FLG X FLG DUCTILE IRON PIPE. PC-350 (TYP.)
2	3/4" HOSE BIB MIPT BRASS
3	COATED STEEL PIPE SUPPORT W/ ADJUSTABLE NUT (TYP.)
4	GRUNDFOS HYDRO MPC E 3CRE45-4
5	SADDLE, 6" x 1" IPT
6	SADDLE, 6" x 1" IPT, W/ 1" x 1/4" BUSHING
7	GATE VALVE, 1" BRASS, FIPT
8	STRAINER, 1" x 1" FIPT G.I.P.
9	FRANKLIN ELECTRIC SINGLE PHASE 115/230 VOLTS 3/4 HP BOOSTER PUMP MODEL 5FBT07S4
10	BOOSTER PUMP BRACKET
11	UNION 1" SLIP SCH. 80 PVC
12	WALLACE AND TIERNAN 300 99-C CHLORINE INJECTOR (10LB/DAY)
13	COUPLING, 1" SLIP SCH. 80 PVC
14	GAUGE GLYCER 1/4" 0-350
15	CHLORINE SCALE
16	GAS CHLORINE CYLINDER
17	PIPE 1" CUT AND THREADED TO FIT, G.I.P. (TYP.)
18	ELBOW 90° 1" FIPT G.I.P.
19	PIPE 1" CUT TO FIT SCH. 80 PVC (TYP.)
20	BALL VALVE 1" SLIP SCH. 80 PVC
21	6" DUCTILE IRON FLG'D X PE SPOOL (TYP.)

Brown AND Caldwell

SALT LAKE CITY, UT

CERTIFICATE NO. 36697 STEVEN BRENCHLEY Date Signed 3/3/2022 ARIZONA, U.S.A.

CONSTRUCTION ISSUE

NAVAJO TRIBAL UTILITY AUTHORITY NTUA UTILITIES FOR THE NAVAJO NATION

DILKON PASS PIPELINE AND PUMP STATION

REVISIONS

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DESIGNED: C.WILLMORE
DRAWN: T. PRIDEMORE
CHECKED: C.WILLMORE
CHECKED: ----
APPROVED: S. BRENCHLEY

FILENAME
M-100.dwg

BC PROJECT NUMBER
157520

CLIENT PROJECT NUMBER

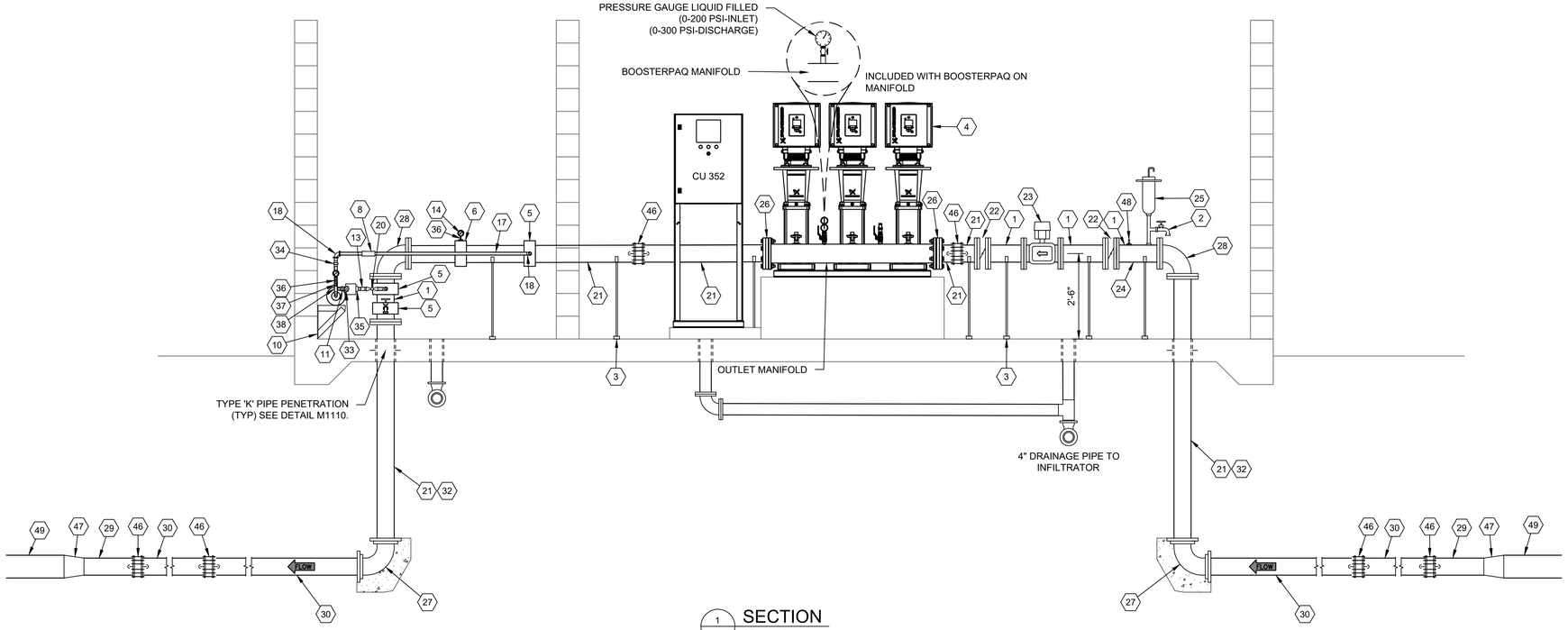
PROCESS

DILKON PASS PUMP STATION BUILDING PLAN

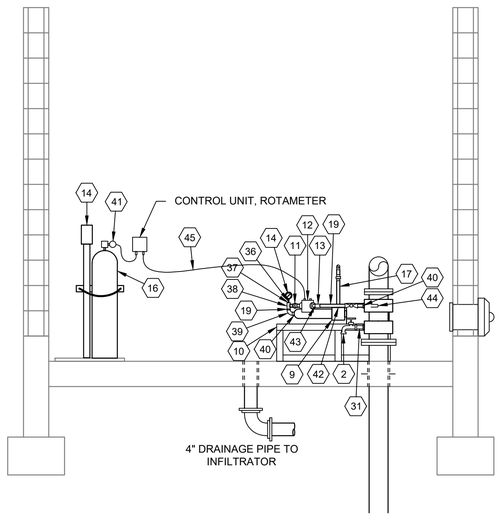
DRAWING NUMBER
M-100

SHEET NUMBER 30 OF 59

Path: C:\BCPWD2344910 FILENAME: M-100.DWG PLOT DATE: 3/4/2022 4:24 PM CAD USER: TYLER PRIDEMORE



1 M-100 SECTION
SCALE: 1/2" = 1'-0"



2 M-100 SECTION
SCALE: 1/2" = 1'-0"

GENERAL NOTES

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KEY NOTES

1 6" FLG X FLG DUCTILE IRON PIPE. PC-350 (TYP.)
2 3/4" HOSE BIB MIPT BRASS
3 COATED STEEL PIPE SUPPORT W/ ADJUSTABLE NUT (TYP.)
4 GRUNDFOS HYDRO MPC E 3CRE45-4
5 SADDLE, 6" x 1" IPT
6 SADDLE, 6" x 1" IPT, W/ 1" x 1/4" BUSHING
7 GATE VALVE, 1" BRASS, FIPT
8 STRAINER, 1" x 1" FIPT G.I.P.
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10 BOOSTER PUMP BRACKET
11 UNION 1" SLIP SCH. 80 PVC
12 WALLACE AND TIERNAN 300 99-C CHLORINE INJECTOR (10LB/DAY)
13 COUPLING, 1" SLIP SCH. 80 PVC
14 GAUGE GLYCER 1/4" 0-350
15 CHLORINE SCALE
16 GAS CHLORINE CYLINDER
17 PIPE 1" CUT AND THREADED TO FIT, G.I.P. (TYP.)
18 ELBOW 90° 1" FIPT G.I.P.
19 PIPE 1" CUT TO FIT SCH. 80 PVC (TYP.)
20 BALL VALVE 1" SLIP SCH. 80 PVC
21 6" DUCTILE IRON FLG'D X PE SPOOL (TYP.)
22 6" MUELLER LINESEAL III BUTTERFLY VALVE, FLANGED ENDS
23 6" EVOQ4 ELECTROMAGNETIC METER
24 SPOOL TO INCLUDE TAPPING BOSS FOR 3/4" HOSE BIB AND CAV VALVE AND PRESSURE TRANSDUCER
25 3/4" COMBINATION AIR/VACUUM VALVE, SEE SPECIFICATION 15150
26 DIELECTRIC INSULATING JOINT AND FLANGE SPACER WITH BOLT ISOLATORS
27 DIP MJ X MJ 90° BEND WITH THRUST BLOCK AND MEGALUG RESTRAINED JOINTS
28 6" FLG'D 90° DUCTILE IRON ELBOW
29 6" PVC PIPE, SEE SITE PLAN SHEET C-100
30 6" DI PIPE, PC 350 (WRAP IN TWO (2) LAYERS OF 8 MIL. POLYETHYTENE
31 BUSHING, 1" x 3/4"
32 (WRAP IN TWO (2) LAYERS OF 8 MIL. POLYETHYTENE
33 NOZZLE EJECTOR
34 UNION, 1" FIPT G.I.P.
35 TAILWAY EJECTOR
36 VALVE PRESSURE COCK 1/4" MIPT BRASS
37 BUSHING 1" S X 1/4" FIPT SCH. 80 PVC
38 TEE 1" SLIP SCH. 80 PVC
39 ELBOW 90° 1" SLIP SCH. 80 PVC
40 ADAPTER 1" S X MIPT SCH. 80 PVC
41 PRESSURE REGULATOR
42 BUSHING 1-1/4" X 1" G.I.P.
43 BUSHING 1" S X 3/4" FIPT SCH. 80 PVC
44 1/2" PVC-SOLUTION TUBE
45 TUBING
46 6" ROMAC STYLE 501 FLEXIBLE COUPLING
47 8" x 6" MJ x MJ REDUCER
48 WICA C-10 PRESSURE TRANSDUCER
49 8" PVC PIPE, SEE SITE PLAN SHEET C-100

Brown AND Caldwell
SALT LAKE CITY, UT

CERTIFICATE NO. 36697 STEVEN BRENCHLEY Date Signed 3/3/2022 ARIZONA, U.S.A.

CONSTRUCTION ISSUE

NAVAJO TRIBAL UTILITY AUTHORITY NTUA UTILITIES FOR THE NAVAJO NATION

DILKON PASS PIPELINE AND PUMP STATION

REVISIONS

REV	DATE	DESCRIPTION

LINE IS 2 INCHES AT FULL SIZE

DESIGNED: C.WILLMORE
DRAWN: T. PRIDEMORE
CHECKED: C. WILLMORE
CHECKED: - -
APPROVED: S. BRENCHLEY
FILENAME M-101.dwg
BC PROJECT NUMBER 157520
CLIENT PROJECT NUMBER

PROCESS

DILKON PASS PUMP STATION BUILDING SECTION

DRAWING NUMBER
M-101

31 SHEET NUMBER OF 59

Path: C:\BCPW\D2344910 FILENAME: M-101.DWG PLOT DATE: 3/4/2022 4:40 PM CAD USER: TYLER.PRIDEMORE

GENERAL

G 1 SCOPE
THE GENERAL NOTES AND STANDARD DETAILS ARE GENERAL AND APPLY TO THE ENTIRE PROJECT EXCEPT WHERE THERE ARE SPECIFIC INDICATIONS TO THE CONTRARY.

G 2 PRECEDENCE
IF THERE IS A CONFLICT BETWEEN PROJECT SPECIFICATIONS AND STRUCTURAL DRAWINGS, INCLUDING STRUCTURAL NOTES, CONTACT THE STRUCTURAL ENGINEER OF RECORD FOR CLARIFICATION. SPECIFIC NOTES AND DETAILS ON DRAWINGS TAKE PRECEDENCE OVER GENERAL NOTES AND TYPICAL DETAILS.

G 3 DIMENSIONS
STRUCTURAL DIMENSIONS CONTROLLED BY OR RELATED TO THE MECHANICAL OR ELECTRICAL EQUIPMENT AND DIMENSIONS RELATED TO EXISTING FACILITIES SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION. CONTRACTOR IS RESPONSIBLE FOR COORDINATING ALL CONSTRUCTION DIMENSIONS AND NOTIFYING CONSTRUCTION MANAGER OF DISCREPANCIES IN A TIMELY FASHION.

G 4 PROVISIONS FOR EQUIPMENT
MECHANICAL AND ELECTRICAL EQUIPMENT SUPPORTS, ANCHORAGES, OPENINGS, RECESSES AND EMBEDMENTS NOT SPECIFIED ON THE STRUCTURAL DRAWINGS, BUT SPECIFIED ON OTHER CONTRACT DRAWINGS, SHALL BE PROVIDED PRIOR TO CASTING CONCRETE.

G 5 MEANS, METHODS & CONSTRUCTION LOADS
CONTRACT DRAWINGS AND SPECIFICATIONS REPRESENT THE FINISHED STRUCTURE. CONTRACTOR IS RESPONSIBLE FOR MEANS, METHODS AND SEQUENCE OF CONSTRUCTION, AND SHALL MAKE ADEQUATE PROVISION TO MAINTAIN THE INTEGRITY OF ALL STRUCTURES AT ALL STAGES OF CONSTRUCTION. DETERMINATION OF AND PROVISIONS FOR CONSTRUCTION LOADING SHALL BE PROVIDED BY THE CONTRACTOR.

G 6 SAFETY
CONTRACTOR SHALL TAKE ADEQUATE PRECAUTIONS TO ENSURE THE SAFETY OF WORKERS AND VISITORS TO THE SITE, INCLUDING BUT NOT LIMITED TO SHORING, BRACING AND ACCESS RESTRICTION. COMPLY WITH ALL FEDERAL, STATE AND LOCAL SAFETY CODES AND STANDARDS.

G 7 DRAINAGE SURFACES
SLOPE DRAINAGE SURFACES UNIFORMLY TO DRAIN. SLOPE SHALL BE 1/8" TO 1/4" PER FOOT EXCEPT WHERE NOTED OTHERWISE ON THE PLANS.

G 8 OPENINGS
OPENINGS THROUGH NEW AND EXISTING WALLS AND SLABS FOR PIPES, DUCTS, CONDUITS, ETC., ARE NOT ALL SHOWN ON THE STRUCTURAL DRAWINGS. THE CONTRACTOR SHALL COORDINATE WITH OTHER DISCIPLINES AND PROVIDE THESE OPENINGS IN ACCORDANCE WITH THE OTHER CONTRACT DOCUMENTS.

DESIGN CRITERIA

D 1 GOVERNING BUILDING CODE
CONSTRUCTION AND DESIGN SHALL BE IN ACCORDANCE WITH THE 2015 INTERNATIONAL BUILDING CODE. THIS CODE SHALL GOVERN EXCEPT WHERE OTHER APPLICABLE CODES OR CONTRACT PROVISIONS ARE MORE RESTRICTIVE.

D 2 LIVE LOADS
1. PUMP STATION ROOF LIVE LOAD.....20 PSF
2. SLAB ON GRADE LIVE LOAD.....250 PSF

D 3 SNOW LOADS
PUMP STATION
GROUND SNOW LOAD ..... p_g = 30 PSF
SNOW EXPOSURE FACTOR ..... C_e = 0.9
THERMAL FACTOR ..... C_t = 1.1
SNOW LOAD IMPORTANCE FACTOR ..... I_s = 1.1
FLAT ROOF SNOW LOAD ..... p_f = 25 PSF
PLUS DRIFT LOADS IN ACCORDANCE WITH ASCE 7-10

D 4 WIND
RISK CATEGORY III
EXPOSURE CATEGORY C
TOPOGRAPHIC FACTOR ..... K_{ZT}= 1.0
PUMP STATION
BASIC WIND SPEED (ULTIMATE).....115 MPH

D 5 SEISMIC
MCE ACCELERATION, SHORT PERIOD ..... S_S = 0.149 g
MCE ACCELERATION, 1-SEC PERIOD ..... S_1 = 0.052 g
SITE CLASS .....D
DESIGN ACCEL, SHORT PERIOD ..... S_{DS} = 0.159 g
DESIGN ACCEL, 1-SEC PERIOD ..... S_{D1} = 0.083 g
RISK CATEGORY III
SEISMIC IMPORTANCE FACTOR ..... I_e = 1.25 I_p = 1.5,
SEISMIC DESIGN CATEGORY .....B
PUMP STATION BUILDING
ORDINARY REINFORCED MASONRY SHEAR WALLS
(ASCE 7-10, TABLE 12.2-1) .....R = 2 Ω_o = 2.5
ANALYSIS PROCEDURE: EQUIVALENT LATERAL FORCE

FOUNDATION

F 1 DESIGN BASIS
FOUNDATION DESIGN IS BASED ON RECOMMENDATIONS CONTAINED IN THE GEOTECHNICAL REPORT, "DILKON PASS PUMP HOUSE AND PIPELINE PROJECT, DILKON, AZ" BY WOOD ENVIRONMENT & INFRASTRUCTURE SOLUTIONS, INC. DATED 02/14/22. CONTRACTOR SHALL FOLLOW THE PROJECT SPECIFICATIONS AND TAKE INTO CONSIDERATION RECOMMENDATIONS CONTAINED IN THE REPORT. NOTIFY THE CONSTRUCTION MANAGER OF CONFLICTS BETWEEN SPECIFICATIONS AND THE REPORT RECOMMENDATIONS FOR RESOLUTION.

F 2 ALLOWABLE BEARING PRESSURE
SHALLOW FOUNDATIONS SHALL BEAR ON AT LEAST 3 FEET OF STRUCTURAL FILL AND HAVE BEEN DESIGNED FOR AN ALLOWABLE BEARING PRESSURE OF 2,000 PSF.

F 3 MINIMUM FOUNDATION PREPARATION
ALL NEW FOUNDATIONS, BEDDING MATERIAL AND SLAB ON GRADE FLOORS SHALL BE SUPPORTED ON A MINIMUM OF 3 FEET OF PROPERLY PLACED AND COMPACTED STRUCTURAL FILL (SEE GEOTECHNICAL REPORT).

F 4 DIFFERING CONDITIONS
FOUNDATION CONDITIONS NOTED DURING CONSTRUCTION WHICH DIFFER FROM THOSE INDICATED IN THE REPORT SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE CONSTRUCTION MANAGER. CONTRACTOR IS RESPONSIBLE FOR REPLACING WORK CONDUCTED AFTER SUCH NOTIFICATION BUT BEFORE CONSTRUCTION MANAGER PROVIDES ADDITIONAL DIRECTIONS.

F 5 EXCAVATION, DE-WATERING & SAFETY
CONTRACTOR SHALL PROVIDE FOR ALL DE-WATERING OF EXCAVATIONS, AND DESIGN / PROVIDE ALL CRIBBING, SHORING AND BRACING REQUIRED FOR SAFETY AND TO ALLOW CONSTRUCTION OF THE WORK PRESENTED HEREIN.

F 6 STRUCTURAL BACKFILL
UNLESS NOTED OTHERWISE, STRUCTURAL BACKFILL SHALL BE PLACED IN UNIFORM LAYERS AND SHALL BE BROUGHT UP UNIFORMLY AROUND THE STRUCTURE. ADDITIONALLY, BACKFILL SHALL BE BROUGHT UP UNIFORMLY ON BOTH SIDES OF FOUNDATION WALLS. SEE SPECIFICATION 02200 FOR ADDITIONAL INFORMATION.

CONCRETE

C 1 APPLICABLE CODES
CONCRETE CONSTRUCTION SHALL CONFORM TO ACI 301-10 "SPECIFICATIONS FOR STRUCTURAL CONCRETE", AND THE FOLLOWING CODES:
ACI 318-14 "BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE"

C 2 REINFORCING STEEL DETAILS
ALL DETAILING, FABRICATION AND ERECTION OF REINFORCING BARS, UNLESS OTHERWISE NOTED, SHALL BE IN ACCORDANCE WITH ACI DETAILING MANUAL (ACI SP-66), LATEST EDITION.

C 3 DESIGN STRENGTH
1. STRUCTURAL CAST-IN-PLACE CONCRETE ..... f'c = 4,500 PSI
2. REINFORCING STEEL .....ASTM A615, GRADE 60 DEFORMED BARS UNLESS OTHERWISE NOTED

C 4 CONCRETE COVER
CONCRETE COVER FOR REINFORCING BARS SHALL CONFORM TO ACI 318 AND AS FOLLOWS WITH MINIMUM COVER OF ONE BAR DIAMETER:
1. CONCRETE CAST AGAINST EARTH ..... 3"
2. CONCRETE EXPOSED TO EARTH, WASTEWATER, CHEMICALS OR WEATHER ..... 2"
3. CONCRETE NOT EXPOSED TO EARTH, WASTEWATER, CHEMICALS OR WEATHER .....1-1/2"

C 5 BAR DEVELOPMENT AND LAP SPLICE LENGTH
SEE TABLE AT THE END OF THESE STRUCTURAL NOTES. IN SLABS, BEAMS, GIRDERS AND HORIZONTAL REINFORCING AT WALLS, SPLICES OF ADJACENT REINFORCING STEEL BARS SHALL BE STAGGERED AT LEAST ONE SPLICE LENGTH, UNLESS OTHERWISE SPECIFIED.

C 6 STANDARD HOOKS
BARS ENDING IN RIGHT ANGLE BENDS OR HOOKS SHALL CONFORM TO THE REQUIREMENTS OF ACI 318-14. PROVIDE STANDARD HOOK IN BARS WHICH TERMINATE AT WALL OR SLAB EDGES / INTERSECTIONS THAT PROVIDE LESS THAN THE SPECIFIED DEVELOPMENT LENGTH.

C 7 CHAMFERS
EXCEPT AS OTHERWISE REQUIRED, EXPOSED CONCRETE CORNERS AND EDGES SHALL HAVE 3/4" CHAMFERS. RE-ENTRANT CORNERS SHALL NOT HAVE FILLETS.

C 8 ANCHOR BOLTS
ANCHOR BOLTS SHALL BE STAINLESS STEEL TYPE 316 MATERIAL UNLESS OTHERWISE NOTED (SEE SPECIFICATIONS).

C9 COMPATIBLE FINISHES
CURING COMPOUNDS AND OTHER SURFACE TREATMENTS, CONCRETE ADMIXTURES AND SUB-SLAB DRAINAGE SHALL BE REVIEWED BY CONTRACTOR AND CERTIFIED COMPATIBLE WITH FINISHES TO BE APPLIED LATER IN THE CONSTRUCTION SEQUENCE.

C10 VAPOR BARRIER BELOW SLAB ON GRADE
VAPOR BARRIER, WHERE NOTED ON THE DRAWINGS, SHALL BE 10 MIL MINIMUM CLASS A OR B PLASTIC WATER VAPOR RETARDER PER ASTM E1745. INSTALL PER ASTM E1643. LAP JOINTS 6" AND SEAL WITH MANUFACTURER'S RECOMMENDED TAPE OR ADHESIVE.

GROUT

GR 1 EQUIPMENT GROUTING
SEE MECHANICAL SPECIFICATIONS AND SPECIFICATION SECTION 03600, GROUT.

GR 2 EPOXY ADHESIVE GROUT AT ANCHORS INTO CONCRETE: HILTI HIT-RE 500v3 EPOXY ADHESIVE ANCHOR SYSTEM BY HILTI INC. OR EQUAL APPROVED BY ENGINEER OF RECORD. INSTALLERS OF HORIZONTAL OR UPWARDLY INCLINED ADHESIVE ANCHORS SHALL BE CERTIFIED IN ACCORDANCE WITH THE ACI / CRSI ADHESIVE ANCHOR INSTALLER CERTIFICATION PROGRAM.

GR 3 MASONRY ADHESIVE ANCHORS: HILTI HIT-HY 270.

REINFORCED CONCRETE MASONRY

MA 1 CONCRETE MASONRY UNITS (CMU) SHALL BE HOLLOW LOAD BEARING UNITS CONFORMING TO ASTM C90, MEDIUM WEIGHT.

MA 2 SPECIFIED COMPRESSIVE STRENGTH OF CONCRETE MASONRY (f'm) = 2,000 PSI.

MA 3 CMU WALLS SHALL BE SOLID GROUTED.

MA 4 MORTAR SHALL BE TYPE S CONFORMING TO ASTM C270.

MA 5 CMU AND MORTAR AT WEATHER ENCLOSURE WALLS OR AT ELECTRICAL CONTROL ROOMS IN HIGH MOISTURE ENVIRONMENTS SHALL CONTAIN "DRY BLOCK ADMIXTURE" AS MANUFACTURED BY W.R. GRACE CO., AMOUNT PER MANUFACTURER'S RECOMMENDATION.

MA 6 GROUT SHALL BE f'c = 2,000 PSI CONFORMING TO ASTM C476.

MA 7 REINFORCING STEEL SHALL BE ASTM A615, GRADE 60 DEFORMED BARS.

MA 8 RUNNING BOND SHALL BE USED THROUGHOUT.

MA 9 USE 3/8" FLUSH MORTAR JOINTS THROUGHOUT, TOOLED CONCAVE.

STEEL

ST 1 ALL STRUCTURAL STEEL WORK SHALL BE IN ACCORDANCE WITH THE AISC "SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS" (AISC 360-10) AND AISC "CODE OF STANDARD PRACTICE FOR STEEL BUILDINGS AND BRIDGES" (AISC 303-10).

ST 2 MATERIALS
1. STEEL WIDE FLANGE SHAPES SHALL CONFORM TO ASTM A992. OTHER STEEL SHAPES AND PLATES SHALL CONFORM TO ASTM A36.
2. ALL STAINLESS STEEL SHALL BE TYPE 316 MEETING ASTM A276 FOR BARS AND SHAPES, AND ASTM A240 FOR PLATES, UNLESS OTHERWISE SPECIFIED. ALL STAINLESS STEEL SHALL BE PASSIVATED PER ASTM A380.

ST 3 WELDING
1. WELDING SHALL CONFORM TO AWS D1.1-1 AND AISC 341-10.
2. ELECTRODES FOR SHOP AND FIELD WELDS SHALL CONFORM TO AWS A5.1 OR A5.5, CLASS E70XX.
3. STAINLESS STEEL WELDING SHALL CONFORM TO AWS D1.6 WITH A5.4 OR A5.9 ELECTRODES.

ST 4 BOLTS
STRUCTURAL BOLTS AT STEEL FRAMING SHALL BE GALVANIZED AND CONFORM TO ASTM A325N (TYPE 1) FOR CONNECTION OF GALVANIZED OR PAINTED FRAMING. HIGH STRENGTH BOLTS SHALL BE FULLY TENSIONED UNLESS CONNECTING HSS SHAPES OR OTHERWISE NOTED. STAINLESS STEEL TYPE 316 BOLTS SHALL BE USED FOR CONNECTION OF STAINLESS STEEL FRAMING.

ST 5 EXPANSION ANCHORS SHALL BE STAINLESS STEEL "KWIK BOLT TZ2" BY HILTI INC. OR EQUAL APPROVED BY OWNER.

STEEL ROOF DECK

SD 1 DECKING SHALL BE VERCO MANUFACTURING COMPANY TYPE PLB-36 PROFILE, 1 1/2" DEEP, 20 GAUGE, GALVANIZED (G-60), OR EQUAL AS APPROVED BY OWNER.

SD 2 ALL STEEL ROOF DECK FLASHING SHALL BE 22 GAUGE MINIMUM, G-60 GALVANIZED STEEL UNLESS NOTED OTHERWISE ON DRAWINGS.

Brown AND Caldwell
SALT LAKE CITY, UT

CERTIFICATE NO. 70234 JONATHAN HARPER Date Signed 3/4/2022 ARIZONA, U.S.A.

CONSTRUCTION ISSUE

NAVAJO TRIBAL UTILITY AUTHORITY UTILITIES FOR THE NAVAJO NATION

DILKON PASS PIPELINE AND PUMP STATION

REVISIONS

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LINE IS 2 INCHES AT FULL SIZE

DESIGNED: S. BELLIS
DRAWN: T. BOUFFARD
CHECKED: J. HARPER
CHECKED:
APPROVED: C. WILLMORE
FILENAME S-001.dwg
BC PROJECT NUMBER 157520
CLIENT PROJECT NUMBER

STRUCTURAL

GENERAL STRUCTURAL NOTES

DRAWING NUMBER S-001

SHEET NUMBER 32 OF 59

Path: C:\BCPWD2344908 FILENAME: S-001.DWG PLOT DATE: 3/4/2022 4:25 PM CAD USER: THOMAS BOUFFARD

TABLE 1

REQUIRED SPECIAL INSPECTIONS - STRUCTURAL SYSTEMS

SYSTEM OR MATERIAL	REQUIRED INSPECTION	FREQUENCY OF INSPECTION		REMARKS
		CONTINUOUS	PERIODIC	
SOILS	VERIFY EXCAVATIONS ARE EXTENDED TO PROPER DEPTH AND HAVE REACHED PROPER MATERIAL		X	
	VERIFY SOIL MATERIALS BELOW FOOTINGS ARE ADEQUATE TO ACHIEVE DESIGN BEARING CAPACITY		X	
	PRIOR TO PLACEMENT OF COMPACTED FILL, OBSERVE SUBGRADE AND VERIFY THAT SITE HAS BEEN PREPARED PROPERLY		X	
	PERFORM CLASSIFICATION AND TESTING OF COMPACTED FILL MATERIALS		X	SEE TABLE 2
	VERIFY USE OF PROPER MATERIALS, DENSITIES AND LIFT THICKNESSES DURING PLACEMENT AND COMPACTION OF COMPACTED FILL	X		SEE TABLE 2
CONCRETE	INSPECT FORMWORK FOR LOCATION AND DIMENSIONS OF MEMBER BEING FORMED		X	
	VERIFY MATERIAL FOR REINFORCEMENT		X	CONTRACTOR TO SUBMIT CERTIFIED MILL TEST REPORTS
	REINFORCING STEEL PLACEMENT		X	
	INSPECT ANCHORS TO BE CAST IN CONCRETE		X	PRIOR TO AND DURING CONCRETE PLACEMENT
	INSPECT POST-INSTALLED CONCRETE ANCHORS: - HORIZONTAL AND UPWARDLY INCLINED ADHESIVE ANCHORS - OTHER ANCHORS UNLESS ICC REPORT REQUIRED CONTINUOUS INSPECTION	X	X	INSPECTION TO CONFORM TO IBC AND TO ANCHOR MANUFACTURER'S RECOMMENDATIONS AND ICC REPORTS
	VERIFY USE OF REQUIRED CONCRETE MIX DESIGN(S)		X	
	AT THE TIME FRESH CONCRETE IS SAMPLED TO FABRICATE SPECIMENS FOR STRENGTH TESTS, PERFORM SLUMP AND AIR CONTENT TESTS, AND TEMPERATURE OF CONCRETE	X		CONTINUOUS DURING PREPARATION OF SAMPLES
	CONCRETE PLACEMENT	X		
	INSPECTION FOR MAINTENANCE OF CURING PROCEDURES AND TEMPERATURE		X	VERIFY APPROPRIATE CURING METHOD HAS BEEN IMPLEMENTED AFTER EACH POUR
	VERIFY IN-SITU CONCRETE STRENGTH PRIOR TO REMOVAL OF SHORES AND FORMS FROM STRUCTURAL SLABS AND BEAMS		X	
	CEMENTITIOUS GROUTING OF BASE PLATES AND EPOXY GROUTING FOR EQUIPMENT MOUNTING	X		
STRUCTURAL STEEL	FABRICATION OF STRUCTURAL ELEMENTS			FABRICATOR SHALL BE APPROVED IN ACCORDANCE WITH IBC, CHAPTER 17 TO PERFORM WORK WITHOUT SPECIAL INSPECTION
	VERIFY MATERIAL OF ANCHOR BOLTS AND THREADED RODS		X	CONTRACTOR TO SUBMIT MANUFACTURER'S CERTIFIED TEST REPORTS
	VERIFY MATERIAL OF HIGH-STRENGTH BOLTS, NUTS AND WASHERS		X	CONTRACTOR TO SUBMIT MANUFACTURER'S CERTIFIED TEST REPORTS
	VERIFY MATERIAL FOR STRUCTURAL STEEL SHAPES, PLATES, BARS, ETC.		X	CONTRACTOR TO SUBMIT CERTIFIED MILL TEST REPORTS
	VERIFY MATERIALS FOR WELD FILLER MATERIALS		X	
	VERIFY WELDER QUALIFICATIONS		X	CONTRACTOR TO SUBMIT WELDERS CERTIFICATES
	VERIFY USE OF PROPER WELDING PROCEDURES		X	
	INSPECT COMPLETE AND PARTIAL-PENETRATION GROOVE WELDS, MULTI-PASS FILLET WELDS, AND SINGLE-PASS FILLET WELDS GREATER THAN 5/16"	X		
	INSPECT SINGLE-PASS FILLET WELDS LESS THAN OR EQUAL TO 5/16"		X	VISUALLY INSPECT ALL WELDS
	INSPECT HIGH-STRENGTH BEARING-TYPE BOLTED CONNECTIONS		X	
	VERIFY TYPE, DEPTH AND GAGE OF DECKING		X	

TABLE 1

REQUIRED SPECIAL INSPECTIONS - STRUCTURAL SYSTEMS

SYSTEM OR MATERIAL	REQUIRED INSPECTION	FREQUENCY OF INSPECTION		REMARKS
		CONTINUOUS	PERIODIC	
	INSPECT INSTALLATION (ATTACHMENT) OF DECKING		X	
	INSPECT FRAME TO VERIFY THAT BRACING, STIFFENERS, MEMBER LOCATIONS AND JOINT DETAILS COMPLY WITH APPROVED CONSTRUCTION DRAWINGS		X	
MASONRY	VERIFY PROPORTIONS OF SITE -PREPARED MORTAR AND GROUT		X	AT START OF MASONRY CONSTRUCTION
	VERIFY SPECIFIED TYPE, GRADE AND SIZE OF REINFORCEMENT		X	CONTRACTOR TO SUBMIT CERTIFIED MILL TEST REPORTS
	VERIFY MATERIALS FOR MASONRY UNITS, MORTAR, GROUT, ANCHORS, TIES AND ACCESSORIES		X	CONTRACTOR TO SUBMIT MANUFACTURER'S CERTIFIED COMPLIANCE REPORTS
	VERIFY TYPE, SIZE, LOCATION AND INSTALLATION OF EMBEDDED CONNECTORS AND ANCHORS		X	
	VERIFY SIZE AND LOCATION OF STRUCTURAL ELEMENTS		X	
	VERIFY TYPE, SIZE AND LOCATION OF ANCHORAGE OF MASONRY TO OTHER CONSTRUCTION		X	
	VERIFY PROTECTION PROVISIONS FOR COLD AND HOT WEATHER MASONRY CONSTRUCTION		X	
	PLACEMENT OF MASONRY UNITS AND CONSTRUCTION OF MORTAR JOINTS		X	
	REINFORCING STEEL PLACEMENT		X	
	VERIFY GROUT SPACE IS CLEAN		X	
	VERIFY PROPORTIONS OF GROUT; USE OF REQUIRED GROUT MIX DESIGN		X	
	OBSERVE GROUT PLACEMENT	X		
	OBSERVE PREPARATION OF ANY GROUT OR MORTAR SPECIMENS AND/OR PRISMS	X		CONTINUOUS DURING PREPARATION OF SAMPLES

QUALITY ASSURANCE NOTES

1. THE QUALITY OF THE WORKMANSHIP AND THE QUALITY OF THE MATERIALS OF CONSTRUCTION ARE GOVERNED BY THE INTERNATIONAL BUILDING CODE, 2015 EDITION (IBC).
2. ALL NEW STRUCTURES AND MODIFICATIONS TO EXISTING STRUCTURES TO BE CONSTRUCTED AS A PART OF THIS PROJECT ARE CLASSIFIED AS RISK CATEGORY III IN ACCORDANCE WITH THE IBC. THE STRUCTURES ARE CLASSIFIED AS SEISMIC DESIGN CATEGORY B.
3. TO ASSURE THE QUALITY OF THE CONSTRUCTION OF THIS PROJECT, STRUCTURAL TESTS, SPECIAL INSPECTION AND STRUCTURAL OBSERVATION WILL BE PERFORMED IN ACCORDANCE WITH IBC, CHAPTER 17.
4. WHERE FREQUENCY OF INSPECTION IS SPECIFIED TO BE CONTINUOUS, THE SPECIAL INSPECTOR IS EXPECTED TO BE PRESENT IN THE AREA WHERE THE WORK IS BEING PERFORMED AND PROVIDING FULL-TIME OBSERVATION OF THE WORK REQUIRING SPECIAL INSPECTION.
5. WHERE FREQUENCY OF INSPECTION IS SPECIFIED TO BE PERIODIC, THE SPECIAL INSPECTOR IS EXPECTED TO BE PRESENT IN THE AREA WHERE THE WORK HAS BEEN OR IS BEING PERFORMED AND AT THE COMPLETION OF THE WORK (PRIOR TO THE NEXT CONSTRUCTION TASK).
6. SPECIAL INSPECTIONS ARE IN addition TO INSPECTIONS BY THE BUILDING OFFICIALS. CONSTRUCTION IS SUBJECT TO INSPECTION BY THE BUILDING OFFICIAL. COORDINATE WITH BUILDING DEPARTMENT TO DETERMINE REQUIRED INSPECTIONS.
7. CONTRACTOR SHALL PROVIDE ACCESS TO THE WORK FOR REQUIRED INSPECTIONS. CONTRACTOR SHALL PROVIDE NOTIFICATION IN ADVANCE OF REQUIRED INSPECTIONS, TESTING AND STRUCTURAL OBSERVATIONS.

Brown AND Caldwell

SALT LAKE CITY, UT

CERTIFICATE NO. 70234 JONATHAN HARPER Date Signed 3/4/2022 ARIZONA, U.S.A.

CONSTRUCTION ISSUE

NAVAJO TRIBAL UTILITY AUTHORITY NTUA UTILITIES FOR THE NAVAJO NATION

DILKON PASS PIPELINE AND PUMP STATION

REVISIONS

REV	DATE	DESCRIPTION

LINE IS 2 INCHES AT FULL SIZE

DESIGNED: S. BELLIS
DRAWN: T. BOUFFARD
CHECKED: J. HARPER
CHECKED:
APPROVED: C. WILLMORE

FILENAME
S-002.dwg

BC PROJECT NUMBER
157520

CLIENT PROJECT NUMBER

STRUCTURAL

SPECIAL INSPECTIONS 1

DRAWING NUMBER
S-002

SHEET NUMBER 33 OF 59

Path: C:\BCPWD2344908 FILENAME: S-002.DWG PLOT DATE: 3/4/2022 4:29 PM CAD USER: THOMAS BOUFFARD

SPECIAL INSPECTIONS

SI 1 AN INDEPENDENT TESTING COMPANY RETAINED BY THE OWNER AND APPROVED BY THE BUILDING OFFICIAL SHALL INSPECT THE FOLLOWING
(SEE EXPANDED LIST ON DRAWING S-003, SPECIFICATIONS AND GOVERNING CODE):

1. SOIL COMPACTION AT FOUNDATIONS.
2. REINFORCING BAR, CONCRETE PLACEMENT AND TAKING OF CONCRETE TEST SPECIMENS.
3. ANCHOR BOLTS.
4. HIGH STRENGTH BOLTING.
5. MECHANICAL AND ELECTRICAL EQUIPMENT, PERIODIC SPECIAL INSPECTION OF STRUCTURAL COMPONENTS FOR SEISMIC RESISTANCE:
   A. ANCHORAGE OF ELECTRICAL EQUIPMENT.
   B. INSTALLATION OF COMPONENTS WHERE THE COMPONENT IMPORTANCE FACTOR IS 1.5.

SI 2 CONTRACTOR SHALL NOTIFY THE TESTING COMPANY FOR ALL INSPECTIONS.

STRUCTURAL OBSERVATIONS

SO 1 THE OWNER SHALL RETAIN A REGISTERED DESIGN PROFESSIONAL TO PERFORM STRUCTURAL OBSERVATIONS. THE CONSTRUCTION MANAGER SHALL NOTIFY THE OWNER AT LEAST 48 HOURS BEFORE A DESIGNATED WORK IS TO BE COVERED. REFER TO SPECIFICATION 01400 FOR ADDITIONAL REQUIREMENTS.

SO 2 REQUIRED STRUCTURAL OBSERVATIONS INCLUDE:

1. STRUCTURAL FILL.
2. FOUNDATIONS PREPARED FOR CONCRETE PLACEMENT.
3. PRIOR TO GROUTING FIRST LIFT OF MASONRY CONSTRUCTION.
4. COMPLETION OF LATERAL FORCE RESISTING ELEMENTS INCLUDING DIAPHRAGMS AND OTHER ELEMENTS.

TABLE 2
REQUIRED TESTING FOR SPECIAL INSPECTIONS

SYSTEM OR MATERIAL	TESTING		REMARKS
	CODE OR STANDARD REFERENCE	FREQUENCY	
GEOTECHNICAL			
PREPARED SUBGRADE DENSITY	ASTM D6938	EACH 300 SF OF PREPARED SUBGRADE	PER GEOTECHNICAL REPORT
FILL IN-PLACE DENSITY	ASTM D6938	EACH 300 SF OF EACH LIFT PLACED EACH DAY	PER GEOTECHNICAL REPORT
CONCRETE			
CONCRETE COMPRESSIVE STRENGTH	ASTM C31,ASTM C39,ASTM C172	SEE SPECIFICATION 03300	
CONCRETE SLUMP	ASTM C143	WHENEVER CYLINDERS ARE CAST	
CONCRETE AIR CONTENT	ASTM C231	WHENEVER CYLINDERS ARE CAST	
CONCRETE TEMPERATURE	ASTM C1064	WHENEVER CYLINDERS ARE CAST	
CEMENTITIOUS AND EPOXY GROUT COMPRESSIVE STRENGTH	ASTM C942 (CEMENTITIOUS) ASTM C579 (EPOXY)		TEST 2" CUBES FOR EACH GROUT SHIPMENT TO THE FIELD
MASONRY			
COMPRESSIVE STRENGTH,f'm, OF MASONRY ASSEMBLIES			PRIOR TO START OF MASONRY CONSTRUCTION, CONTRACTOR SHALL SUBMIT VERIFICATION OF COMPRESSIVE STRENGTH FOR EACH TYPE OF MASONRY ASSEMBLY. PRISM TEST METHOD SHALL BE USED.
MASONRY UNIT STRENGTH	ASTM C140	(12) UNITS PER EACH 50000 UNITS	CONTRACTOR TO SUBMIT MANUFACTURER'S CERTIFIED TEST REPORTS FOR EACH TYPE OF MASONRY UNIT
GROUT STRENGTH	ASTM C1019	EACH 5000 SF OF WALL	COMPRESSIVE STRENGTH, AIR CONTENT, SLUMP, TEMPERATURE OF FILL FOR MASONRY ASSEMBLIES SHALL BE TESTED PER CONCRETE REQUIREMENTS ABOVE.
PRISM STRENGTH OF MASONRY ASSEMBLY	ASTM C1314	(3) PRISMS FOR EACH 5000 SF OF WALL	A SET OF TESTS IS REQUIRED FOR EACH TYPE OF MASONRY ASSEMBLY

TENSION DEVELOPMENT AND LAP SPLICE LENGTHS (IN INCHES) FOR UNCOATED BARS IN NORMAL-WEIGHT CONCRETE WITH f_c' = 4,000 PSI OR HIGHER

THIS TABLE IS GOOD ONLY FOR CENTER/CENTER SPACING OF REINFORCING BARS EQUAL TO THE MINIMUM SHOWN OR GREATER. NO TRANSVERSE REINFORCING ASSUMED.

BAR SIZE	APPLICATION	CONCRETE COVER = 1.50 IN.			CONCRETE COVER = 2.00 IN.			CONCRETE COVER = 3.00 IN.		
		TOP	OTHER	MIN C/C SPACING	TOP	OTHER	MIN C/C SPACING	TOP	OTHER	MIN C/C SPACING
#3	DEVELOPMENT	12	12	3.50	12	12	4.50	12	12	6.50
	LAP SPLICE	16	16	3.75	16	16	4.75	16	16	6.75
#4	DEVELOPMENT	15	12	3.50	15	12	4.50	15	12	6.50
	LAP SPLICE	20	16	4.00	20	16	5.00	20	16	7.00
#5	DEVELOPMENT	19	15	3.75	19	15	4.75	19	15	6.75
	LAP SPLICE	24	19	4.25	24	19	5.25	24	19	7.25
#6	DEVELOPMENT	22	17	3.75	22	17	4.75	22	17	6.75
	LAP SPLICE	29	22	4.50	29	22	5.50	29	22	7.50
#7	DEVELOPMENT	37	28	4.00	33	25	5.00	33	25	7.00
	LAP SPLICE	48	37	4.75	42	33	5.75	42	33	7.75
#8	DEVELOPMENT	47	36	4.00	37	29	5.00	37	29	7.00
	LAP SPLICE	60	47	5.00	48	37	6.00	48	37	8.00

NOTES:

1. TABULATED VALUES ARE BASED ON GRADE 60 REINFORCING BARS AND NORMAL-WEIGHT CONCRETE.
2. TENSION DEVELOPMENT LENGTHS AND TENSION LAP SPLICE LENGTHS ARE CALCULATED PER ACI 318-14, SECTIONS 25.4.2.3 AND 25.5, RESPECTIVELY.
3. LAP SPLICE LENGTHS ARE LAP CLASS B = 1.3 l_d (ACI 318-14, SECTION 25.5.2).
4. TOP BARS ARE HORIZONTAL BARS WITH MORE THAN 12 IN. OF FRESH CONCRETE CAST BELOW THE BARS. NOTE THAT IN ADDITION TO TOP BARS IN BEAMS AND SLABS, ALL HORIZONTAL BARS IN WALLS ARE CONSIDERED TO BE TOP BARS.

Brown AND Caldwell
SALT LAKE CITY, UT

CERTIFICATE NO. 70234 JONATHAN HARPER Date Signed 3/4/2022 ARIZONA, U.S.A.

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STRUCTURAL

SPECIAL INSPECTIONS 2

DRAWING NUMBER S-003

SHEET NUMBER 34 OF 59

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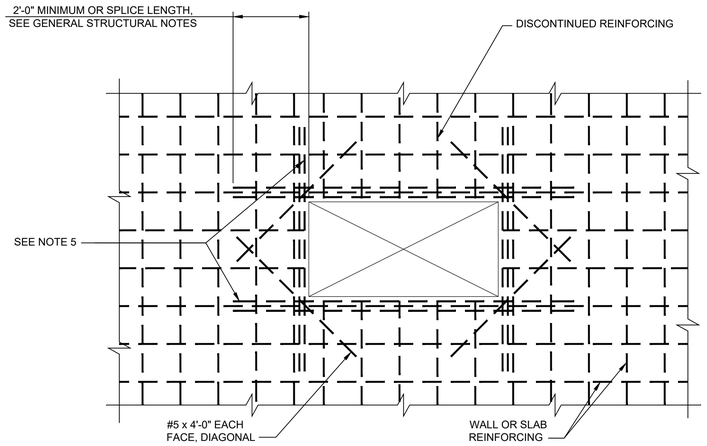
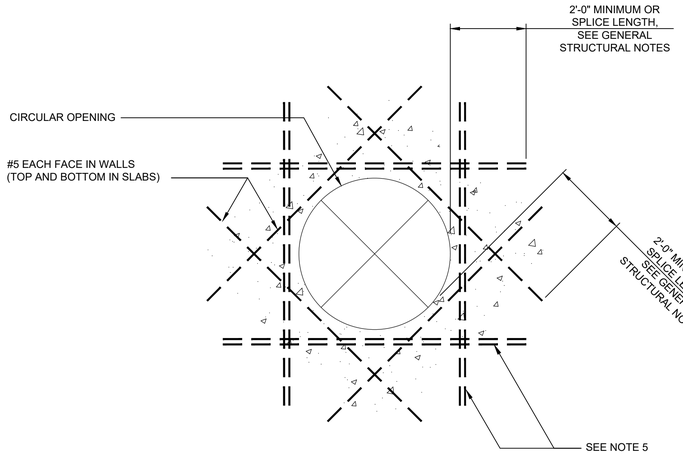
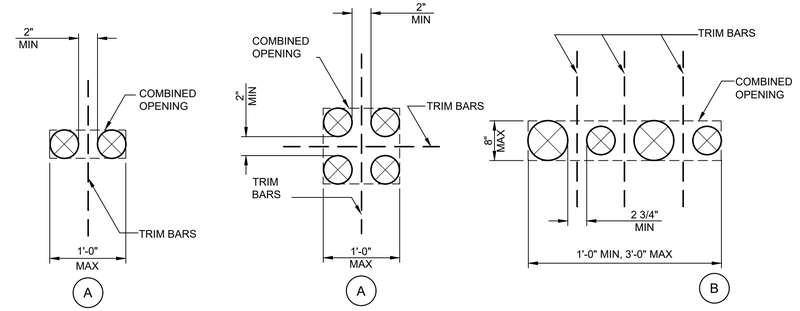


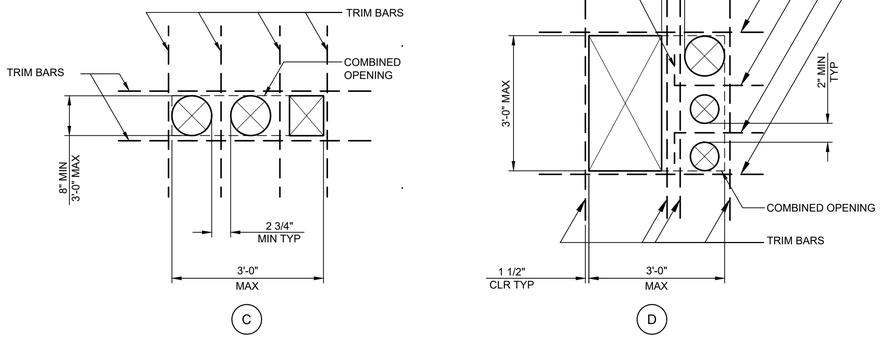


NOTES:

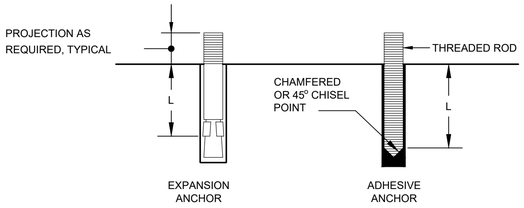
1. THIS DETAIL APPLIES TO UP TO 8'-0" MAXIMUM DIMENSION FOR RECTANGULAR OPENINGS AND UP TO 8'-0" DIAMETER FOR CIRCULAR OPENINGS.
2. AT OPENINGS 12" OR LESS, NO ADDITIONAL #5 DIAGONAL REINFORCING IS REQUIRED UNLESS NOTED OTHERWISE. REINFORCING SHALL BE OFFSET, STILL MAINTAINING REQUIRED SPACING, TO ALLOW FOR OPENING WHERE PRACTICAL, OR CUT AT THE OPENING AND ADDITIONAL REINFORCING ADDED PER NOTE 5.
3. OPENINGS ARE NOT ALL SHOWN ON STRUCTURAL DRAWINGS. PROVIDE OPENINGS IN ACCORDANCE WITH ARCHITECTURAL, MECHANICAL AND OTHER CONTRACT DRAWINGS.
4. ADDITIONAL REINFORCEMENT MAY BE OMITTED ONLY WHERE OPENING IS FRAMED BY BEAMS OR WALLS.
5. ADDITIONAL REINFORCING (4) SIDES OF OPENING EQUAL TO NUMBER AND SIZE OF DISCONTINUOUS REINFORCING. WHERE AN ODD NUMBER OF REBAR ARE DISCONTINUOUS, PROVIDE (ODD NO. +1)/2 EACH SIDE OF OPENING.

S0101 ADDITIONAL REINFORCING AT OPENINGS
NTS





S0102 COMBINED OPENING TRIM BARS
NTS



MINIMUM EMBEDMENT LENGTH, L		
DIAMETER	EXPANSION ANCHOR	ADHESIVE ANCHOR
3/8"	3 1/2"	4 1/2"
1/2"	4 3/4"	6"
5/8"	5 1/2"	7 1/2"
3/4"	6 1/2"	9"
7/8"	-	10 1/2"
1"	-	12"

S0103 CONCRETE ANCHORS
NTS

1. OPENINGS IN CONCRETE WHICH ARE CLOSER TO ONE ANOTHER THAN THE DIAMETER OR SHORTER SIDE OF THE LARGER OF THE TWO ARE CONSIDERED TO FORM A COMBINED OPENING.
2. THESE DIAGRAMS ARE FOR COMBINED OPENINGS WHOSE LARGER DIMENSION DOES NOT EXCEED 3'-0". SEE DRAWINGS FOR OPENINGS LARGER THAN 3'-0".
3. TRIM BAR EXTENSION PAST EDGES OF COMBINED OPENINGS SHALL BE 1'-0" FOR #4 BARS, 1'-6" FOR #5 BARS, AND ONE DEVELOPMENT LENGTH FOR LARGER BARS.
4. DISPLACE PRINCIPAL REINFORCEMENT TO EACH SIDE OF COMBINED OPENING OR PLACE BETWEEN INDIVIDUAL OPENINGS. DO NOT CUT PRINCIPAL REINFORCEMENT.
5. SEE DETAIL S0101 FOR TRIM BARS FOR INDIVIDUAL OPENINGS.
6. SUBMIT SPECIAL SITUATIONS TO ENGINEER FOR REVIEW.

TRIM BAR REQUIREMENTS:

A. IF THE COMBINED OPENING IS SMALLER THAN 1'-0", PROVIDE (1) #5 EACH FACE BETWEEN OPENINGS.

B. IF THE LARGER DIMENSION OF A COMBINED OPENING EXCEEDS 1'-0" BUT THE SMALLER DIMENSION IS LESS THAN OR EQUAL TO 8", AND PROVIDED THE COMBINED OPENING IS ALIGNED WITH THE PRINCIPAL REINFORCEMENT, PROVIDE (1) #5 EACH FACE BETWEEN OPENINGS.

IN ALL OTHER CASES WHERE OPENINGS ARE ARRANGED IN A SINGLE LINE, PROVIDE (1) #5 EACH FACE BETWEEN OPENINGS AND (1) #5 EACH FACE AROUND PERIMETER OF COMBINED OPENING.

C. WHERE INDIVIDUAL OPENINGS OF A COMBINED OPENING FORM TWO OR MORE ROWS, THE ROWS SHALL BE SEPARATED BY AT LEAST 8" OF CONCRETE. PROVIDE (2) #5 EACH FACE BETWEEN ROWS OF OPENINGS, (1) #5 EACH FACE BETWEEN OPENINGS IN THE PERPENDICULAR DIRECTION, AND (1) #5 EACH FACE AROUND THE PERIMETER OF COMBINED OPENINGS. PROVIDE STANDARD HOOKS WHERE BARS TERMINATE WITHIN THE COMBINED OPENING.

D.

NOTES:

1. MINIMUM EMBEDMENT LENGTH PER SCHEDULE UNLESS INDICATED OTHERWISE ON DRAWINGS.
2. CONFORM TO ICC EVALUATION SERVICE REPORT (ES REPORT) REQUIREMENTS AND MANUFACTURER'S RECOMMENDATIONS FOR INSTALLATION.
3. EXPANSION ANCHORS AND THREADED RODS SHALL BE TYPE 316 STAINLESS STEEL MATERIAL UNLESS INDICATED OTHERWISE ON THE DRAWINGS.
4. HOLE DIAMETER SHALL BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

Brown AND Caldwell
SALT LAKE CITY, UT

CERTIFICATE NO. 70234 JONATHAN HARPER Date Signed 3/4/2022 ARIZONA, U.S.A.

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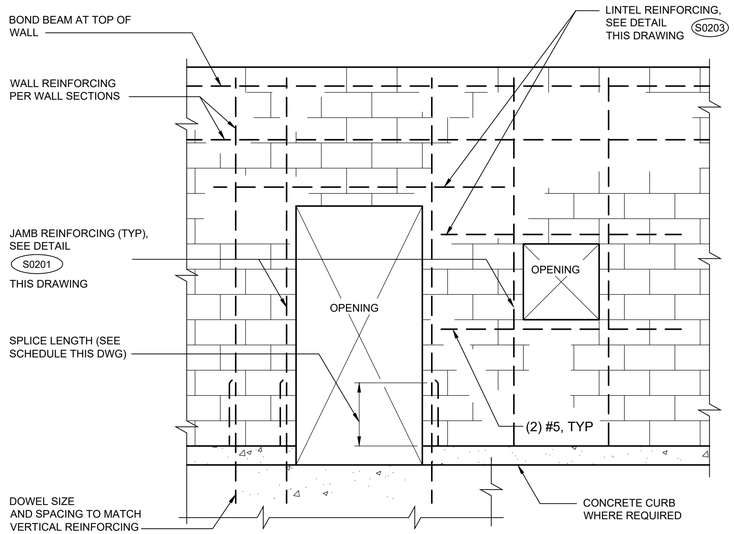
STRUCTURAL

STANDARD DETAILS 1

DRAWING NUMBER S-004

SHEET NUMBER 35 OF 59

Path: C:\BCPW\D2344908 FILENAME: S-004.DWG PLOT DATE: 3/4/2022 1:23 PM CAD USER: THOMAS BOUFFARD

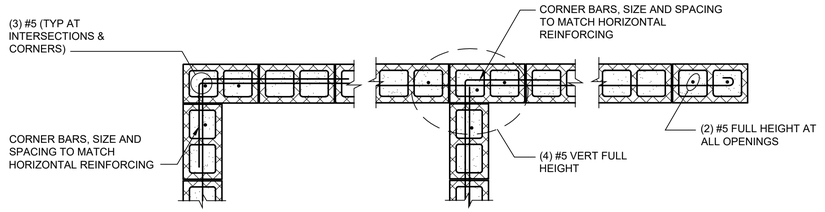


NOTES:
1. GROUT ALL CELLS SOLID UNLESS OTHERWISE NOTED.
2. ADDED REINFORCING AROUND OPENINGS, SUCH AS JAMB AND LINTEL REINFORCING, SHALL EXTEND PAST THE OPENING A MINIMUM DISTANCE AS SPECIFIED IN TABLE OF LAP SPLICE LENGTHS, OR BE HOOKED 180° A MIN OF 2'-0" PAST THE OPENING.

S0201 TYPICAL MASONRY WALL ELEVATION
NTS

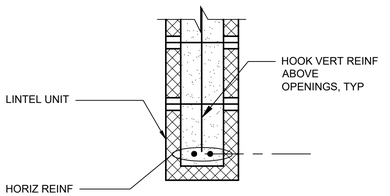
MINIMUM CMU WALL REINFORCING SCHEDULE (UNO)		
WALL THICKNESS	VERT REINF	HORIZONTAL REINF
0'-8"	#5 AT 48" CENTERED	#5 AT 48" CENTERED

LENGTH OF LAP SPLICE FOR REINFORCEMENT (INCHES) (UNLESS NOTED OTHERWISE ON DRAWINGS)	
BAR SIZE	LENGTH
4	36
5	45
6	54



PLAN VIEW - 8" CMU

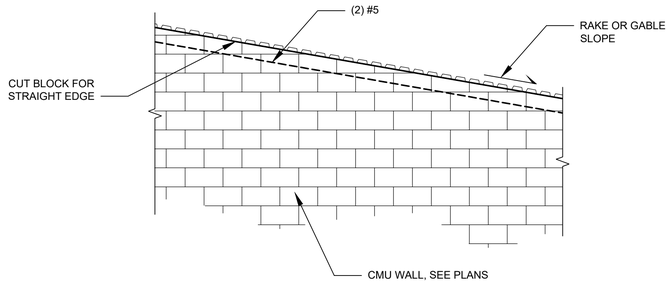
S0202 HORIZONTAL REINFORCING AT CMU WALL INTERSECTIONS
NTS



OPENING WIDTH	HORIZ REINF	LINTEL DEPTH
< 4'-0"	2-#4	8"
4'-0" TO < 6'-0"	2-#5	16"
6'-0" TO 11'-6"	2-#5	16"

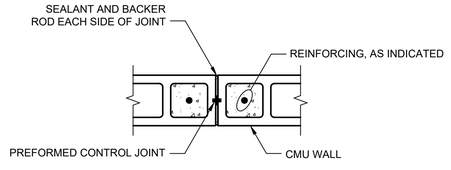
WHERE LINTEL DEPTH >8", MAY USE 8" DEEP LINTEL BLOCK AND 8" CMU BLOCKS WITH INNER WEB REMOVED. FILL LINTEL DEPTH WITH ONE MONOLITHIC CONCRETE GROUT POUR.

S0203 CMU WALL LINTEL
NTS

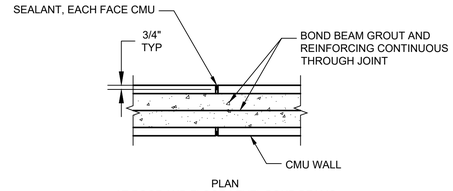


SLOPING BOND BEAM NOTE:
CUT BLOCK AND KNOCK-OUT CELL WALLS AS REQUIRED TO SEAT REINFORCING AND PROVIDE 8" HIGH x CMU WIDTH NOMINAL GROUT AREA.

S0204 SLOPING BOND BEAM
NTS



PLAN
TYPICAL EXCEPT AT ROOF AND FLOOR LEVEL BOND BEAMS



PLAN
AT ROOF AND FLOOR LEVEL BOND BEAMS

NOTE:
1. ALL HORIZONTAL REINFORCING IS TO BE DISCONTINUOUS AT CONTROL JOINTS EXCEPT BOND BEAM REINFORCING AT ROOF LEVEL, FLOOR LEVEL(S), AND PARAPET LEVEL (IF APPLICABLE).

S0205 TYPICAL MASONRY WALL CONTROL JOINT
NTS

Brown AND Caldwell
SALT LAKE CITY, UT

CERTIFICATE NO. 70234 JONATHAN HARPER Date Signed 3/4/2022 ARIZONA, U.S.A.

CONSTRUCTION ISSUE

NAVAJO TRIBAL UTILITY AUTHORITY NTUA UTILITIES FOR THE NAVAJO NATION

DILKON PASS PIPELINE AND PUMP STATION

REVISIONS		
REV	DATE	DESCRIPTION

LINE IS 2 INCHES AT FULL SIZE

DESIGNED: S. BELLIS
DRAWN: T. BOUFFARD
CHECKED: J. HARPER
CHECKED:
APPROVED: C. WILLMORE
FILENAME S-005.dwg
BC PROJECT NUMBER 157520
CLIENT PROJECT NUMBER

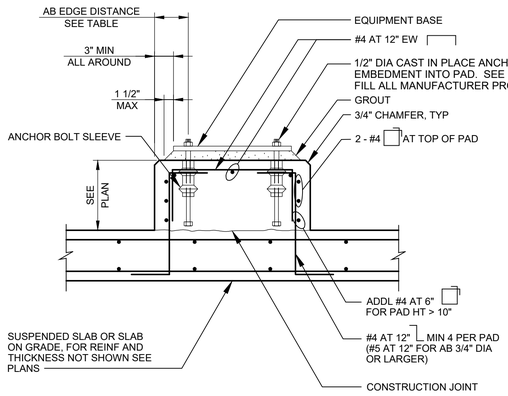
STRUCTURAL

STANDARD DETAILS 2

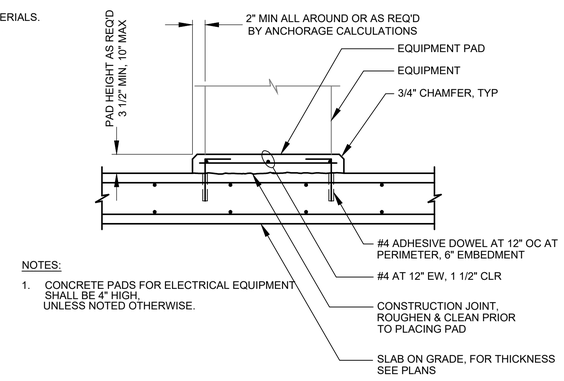
DRAWING NUMBER S-005

SHEET NUMBER 36 OF 59

Path: C:\BCPW\D2344808 FILENAME: S-005.DWG PLOT DATE: 3/4/2022 1:23 PM CAD USER: THOMAS BOUFFARD



TYPE A



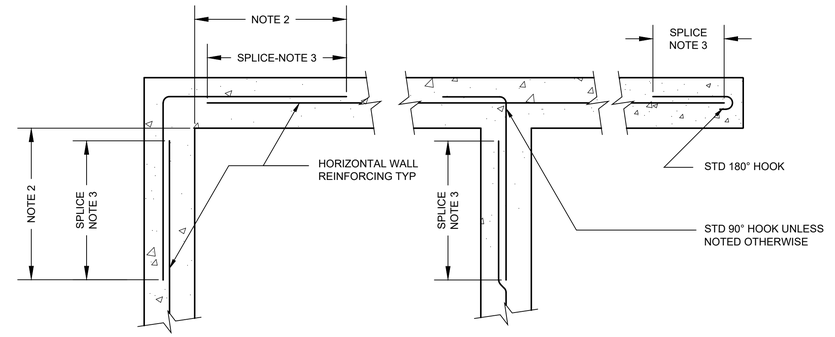
NOTES:

1. CONCRETE PADS FOR ELECTRICAL EQUIPMENT SHALL BE 4" HIGH, UNLESS NOTED OTHERWISE.

TYPE E

EQUIPMENT PAD DIMENSIONS										
AB DIA (IN.)	1/2	5/8	3/4	7/8	1	1 1/4	1 3/8	1 1/2	1 3/4	2
MIN PAD HT (IN.)	7 1/2	9 1/2	11	12 1/2	14	17 1/2	19	20 1/2	24	27
MIN AB EDGE DISTANCE	4 1/2	4 1/2	4 1/2	5 1/4	6	7 1/2	8 1/4	9	10 1/2	12

S0301 EQUIPMENT PADS
NTS

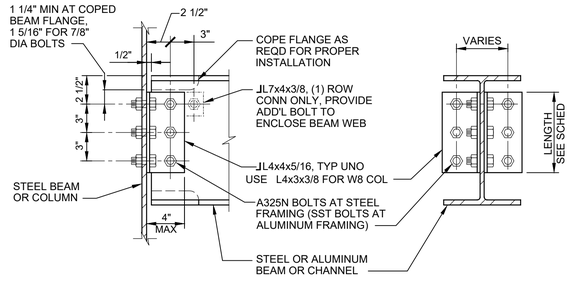


SINGLE MAT REINFORCING

NOTES:

1. UNLESS NOTED OTHERWISE, SIZE AND SPACING OF CORNER OR INTERSECTION REINFORCING SHALL MATCH HORIZONTAL REINFORCING SHOWN IN SPECIFIC SECTIONS OR DETAILS. VERTICAL REINFORCING NOT SHOWN FOR CLARITY.
2. UNLESS NOTED OTHERWISE, BAR SPLICE SHALL BE LOCATED OUTSIDE OF CORNER OR INTERSECTION AREA TO AVOID CONGESTION. CONTRACTORS OPTION TO PROVIDE SINGLE BENT BAR IN LIEU OF SPLICE CONFIGURATION AT ONE END ONLY.
3. SEE GENERAL STRUCTURAL NOTES FOR SPLICE LENGTH. HORIZONTAL WALL BARS SHALL BE CONSIDERED TOP BARS FOR DEVELOPMENT AND SPLICE LENGTHS.

S0302 TYPICAL HORIZONTAL WALL REINFORCING
NTS



NOMINAL BEAM DEPTH, INCHES	ROWS OF BOLTS	BOLT DIA	DOUBLE ANGLE, LENGTH	COMMENTS
8-10	2	3/4"	0'-5 1/2"	-

NOTES:

1. UNLESS OTHERWISE NOTED, NUMBER OF ROWS IS EQUAL TO NUMBER OF BOLTS TO ENCLOSE BEAM WEB.
2. ALL BEAM FRAMING CONNECTIONS SHALL CONFORM TO THIS DETAIL UNLESS SPECIFICALLY NOTED OTHERWISE OR APPROVED IN WRITING BY THE ENGINEER.
3. FOR NOMINAL BEAM DEPTHS LESS THAN 8", EXTEND LONG LEG OF DOUBLE ANGLE ALONG BEAM WEB AND PROVIDE ADDITIONAL BOLT TO ENCLOSE BEAM WEB AS SHOWN.
4. PROVIDE ADDITIONAL 1 1/2" LENGTH TO DOUBLE ANGLE FOR STAGGERED BOLT CONNECTIONS WHERE REQUIRED. DIMENSION SHALL BE 3" UNLESS OTHERWISE REQUIRED FOR PROPER FABRICATION.

S0303 TYPICAL BEAM CONNECTION
NTS

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NAVAJO TRIBAL UTILITY AUTHORITY NTUA UTILITIES FOR THE NAVAJO NATION

DILKON PASS PIPELINE AND PUMP STATION

REVISIONS

REV	DATE	DESCRIPTION

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DESIGNED: S. BELLIS
DRAWN: T. BOUFFARD
CHECKED: J. HARPER
CHECKED:
APPROVED: C. WILLMORE
FILENAME S-006.dwg
BC PROJECT NUMBER 157520
CLIENT PROJECT NUMBER

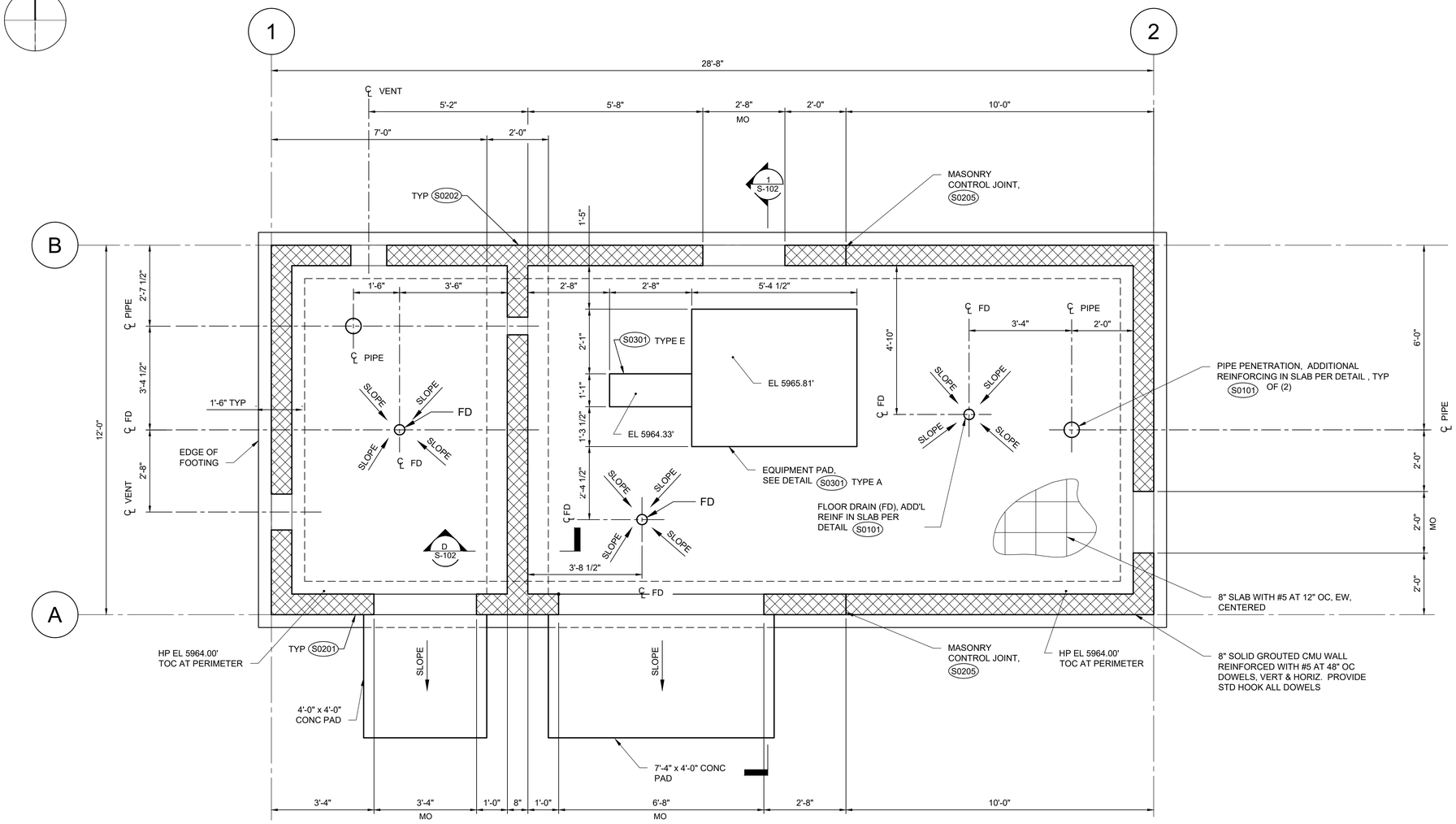
STRUCTURAL

STANDARD DETAILS 3

DRAWING NUMBER S-006

SHEET NUMBER 37 OF 59

PLAN NORTH



PLAN

SCALE: 1/2" = 1'-0"

GENERAL NOTES

1. SEE CIVIL FOR BUILDING COORDINATES.
2. SEE ARCHITECTURAL, ELECTRICAL, AND MECHANICAL DRAWINGS FOR ADDITIONAL INFORMATION.
3. COORDINATE ALL OPENINGS WITH ARCHITECTURAL, ELECTRICAL, AND MECHANICAL DRAWINGS.
4. COORDINATE SIZE AND LOCATION OF ELEC/MECH PADS WITH APPROVED EQUIPMENT SUBMITTALS AND ELECTRICAL AND MECHANICAL DRAWINGS.

Brown AND Caldwell

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CHECKED:	J. HARPER
CHECKED:	
APPROVED:	C. WILLMORE

FILENAME
S-100.dwg

BC PROJECT NUMBER
157520

CLIENT PROJECT NUMBER

STRUCTURAL

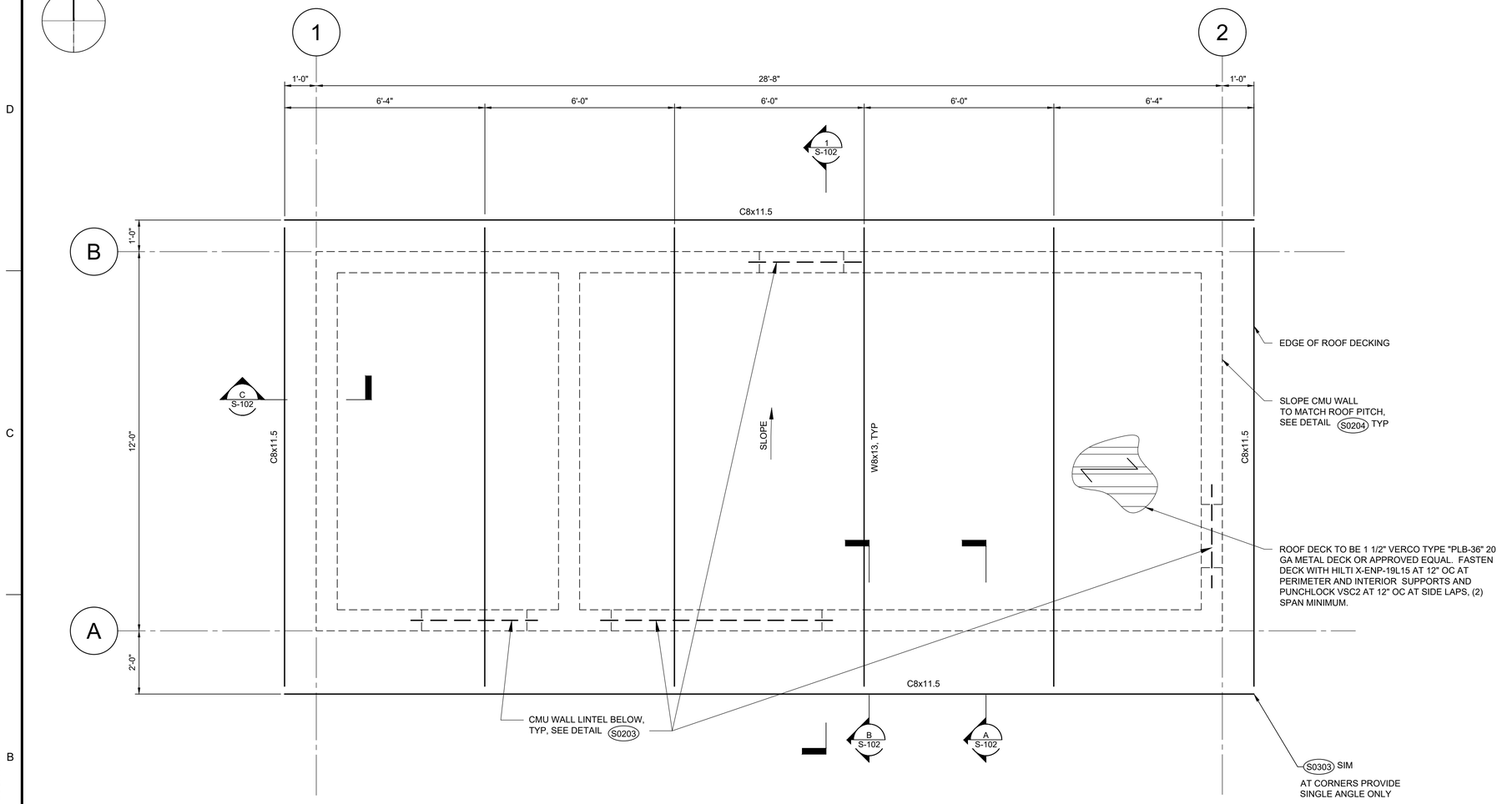
DILKON PASS PUMP STATION BUILDING FOUNDATION PLAN

DRAWING NUMBER
S-100

SHEET NUMBER 38 OF 59

Path: C:\BCPWD2344908 FILENAME: S-100.DWG PLOT DATE: 3/4/2022 1:23 PM CAD USER: THOMAS BOUFFARD

PLAN NORTH



PLAN

SCALE: 1/2" = 1'-0"

GENERAL NOTES

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2. SEE ARCHITECTURAL, ELECTRICAL, AND MECHANICAL DRAWINGS FOR ADDITIONAL INFORMATION.
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NAVAJO TRIBAL UTILITY AUTHORITY UTILITIES FOR THE NAVAJO NATION

DILKON PASS PIPELINE AND PUMP STATION

REVISIONS

REV	DATE	DESCRIPTION

LINE IS 2 INCHES AT FULL SIZE

DESIGNED: S. BELLIS
DRAWN: T. BOUFFARD
CHECKED: J. HARPER
CHECKED:
APPROVED: C. WILLMORE
FILENAME S-101.dwg
BC PROJECT NUMBER 157520
CLIENT PROJECT NUMBER

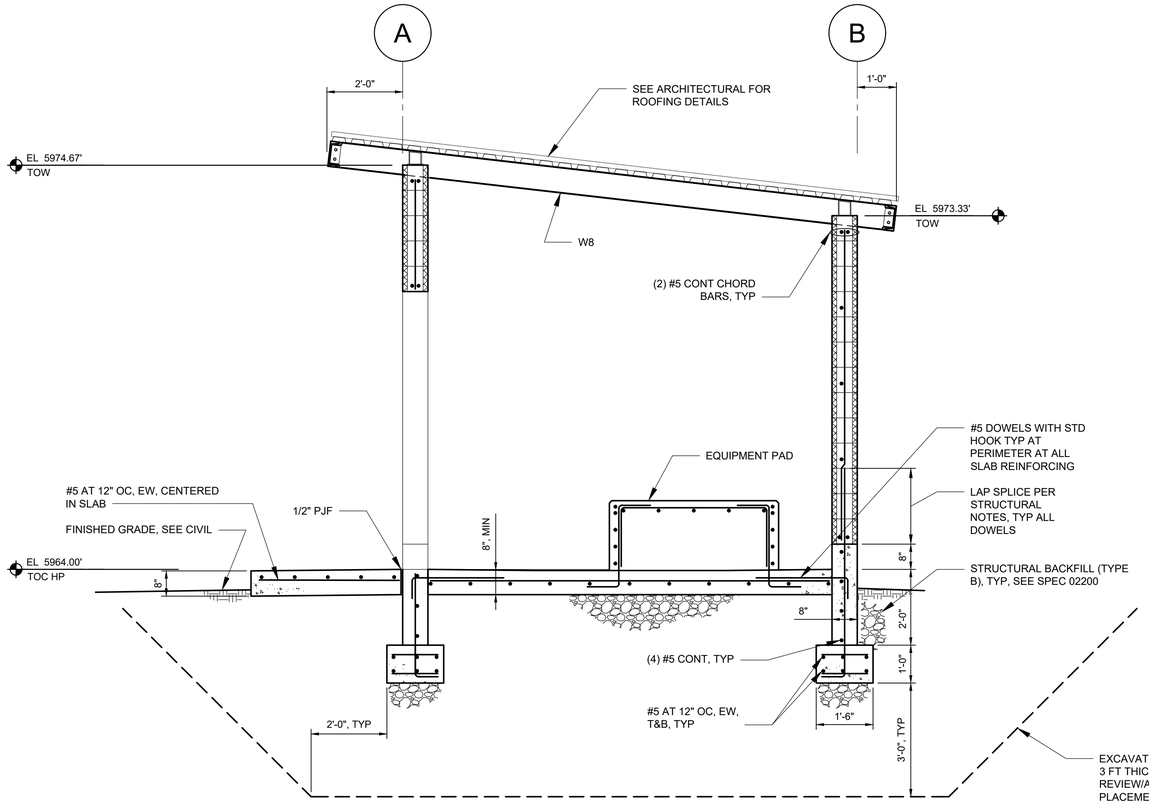
STRUCTURAL

DILKON PASS PUMP STATION BUILDING ROOF FRAMING PLANS

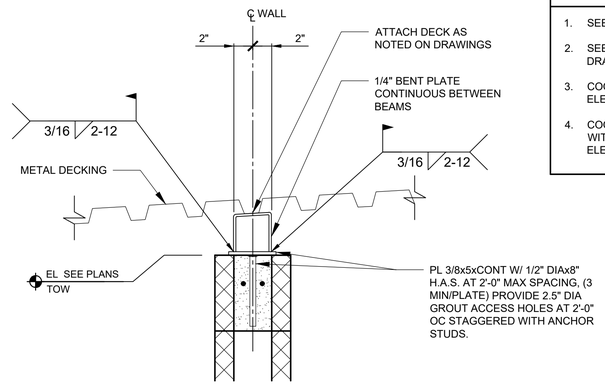
DRAWING NUMBER
S-101

SHEET NUMBER 39 OF 59

Path: C:\BCPWD\2344908 FILENAME: S-101.DWG PLOT DATE: 3/4/2022 1:23 PM CAD USER: THOMAS BOUFFARD



1 / S-100 SECTION
SCALE: 1/2" = 1'-0"



A / S-102 DETAIL
SCALE: 1 1/2" = 1'-0"

GENERAL NOTES

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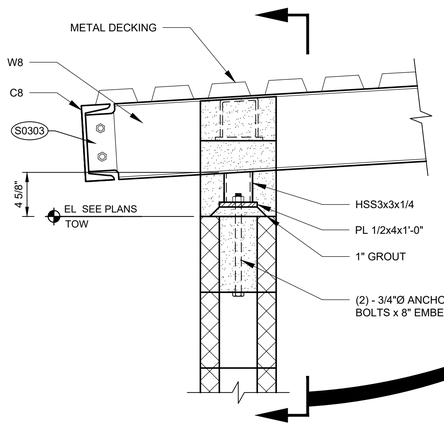
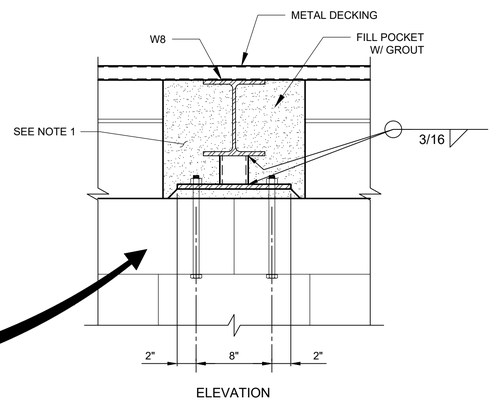
2. SEE ARCHITECTURAL, ELECTRICAL, AND MECHANICAL DRAWINGS FOR ADDITIONAL INFORMATION.
3. COORDINATE ALL OPENINGS WITH ARCHITECTURAL, ELECTRICAL, AND MECHANICAL DRAWINGS.
4. COORDINATE SIZE AND LOCATION OF ELEC/MECH PADS WITH APPROVED EQUIPMENT SUBMITTALS AND ELECTRICAL AND MECHANICAL DRAWINGS.

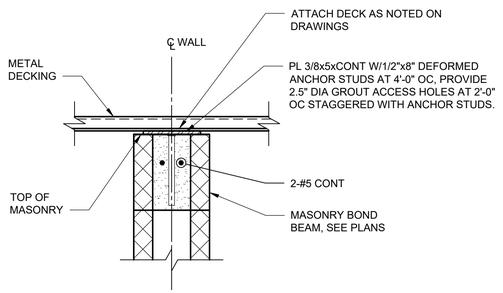




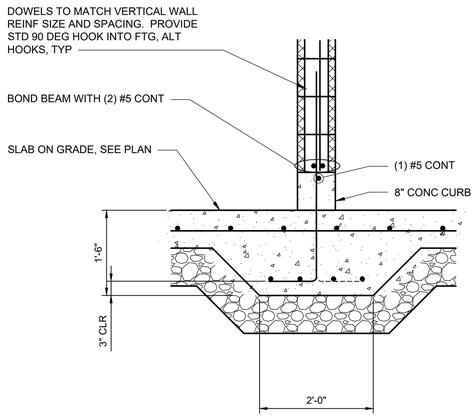
ELEVATION

NOTE:
1. AT BEAM LOCATIONS, NO CMU WILL BE INSTALLED.

B / S-102 DETAIL
SCALE: 1 1/2" = 1'-0"



C / S-102 DETAIL
SCALE: 1 1/2" = 1'-0"



D / S-100 DETAIL
SCALE: 1 1/2" = 1'-0"

Brown AND Caldwell
SALT LAKE CITY, UT

CERTIFICATE NO. 70234 JONATHAN HARPER Date Signed 3/4/2022 ARIZONA, U.S.A.

CONSTRUCTION ISSUE

NAVAJO TRIBAL UTILITY AUTHORITY · UTILITIES FOR THE NAVAJO NATION

DILKON PASS PIPELINE AND PUMP STATION

REVISIONS

REV	DATE	DESCRIPTION

LINE IS 2 INCHES AT FULL SIZE

DESIGNED: S. BELLIS
DRAWN: T. BOUFFARD
CHECKED: J. HARPER
CHECKED:
APPROVED: C. WILLMORE
FILENAME S-102.dwg
BC PROJECT NUMBER 157520
CLIENT PROJECT NUMBER

STRUCTURAL

DILKON PASS PUMP STATION BUILDING SECTION AND DETAILS

DRAWING NUMBER
S-102

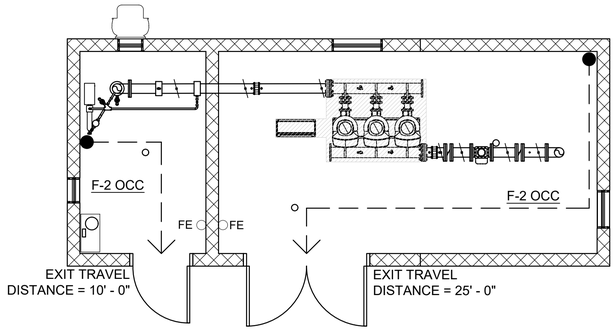
SHEET NUMBER 40 OF 59

Path: C:\BCPWD2344908 FILENAME: S-102.DWG PLOT DATE: 3/4/2022 4:40 PM CAD USER: THOMAS BOUFFARD

BUILDING CODE ANALYSIS

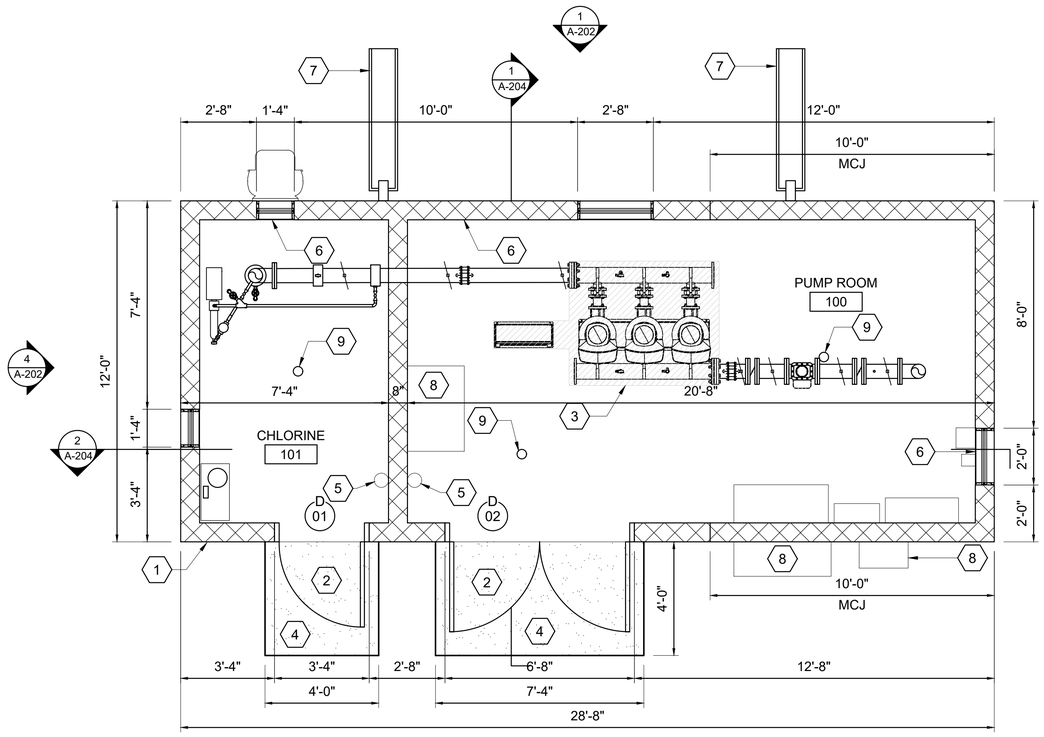
AHJ	NAVAJO NATION (STRUCTURAL DESIGN CRITERIA: NAVAJO COUNTY)
BUILDING CODES	2015 INTERNATIONAL BUILDING CODE 2015 INTERNATIONAL MECHANICAL CODE 2015 INTERNATIONAL FUEL GAS CODE 2015 INTERNATIONAL PLUMBING CODE 2015 INTERNATIONAL ENERGY CONSERVATION CODE 2017 NATIONAL ELECTRICAL CODE 2012 INTERNATIONAL FIRE CODE
OCCUPANCY	F-2 LOW HAZARD
CONSTRUCTION TYPE	TYPE II-B
ALLOWABLE AREAS	23,000 SF / 3 STORIES / 55 FT
ACTUAL AREAS	220 SF / 1 STORY / 11'-6" FT

FIRE EXTINGUISHERS	IBC 906.3.1: FIRE EXTINGUISHERS PROVIDED PER IBC TABLE 906.3(1), MIN.
KEY BOXES	IFC 506.1: KEY BOXES PER UL 1037 IS WILL BE PROVIDED IN LOCATIONS APPROVED BY THE FIRE CODE OFFICIAL
ACCESSIBILITY	OCCUPANCY GROUP F-2: EXEMPT FROM ACCESSIBILITY REQUIREMENTS PER IBC 1103.2.9
EGRESS	DISTANCE TO EXITS: (TABLE 1014.3) F-2 75 FT MAXIMUM, WITHOUT SPRINKLER SYSTEM OCCUPANCY LOADS: (TABLE 1004.1.2) F-2 OCCUPANCY 220 SF / 300 (MECHANICAL EQUIPMENT ROOM) = 1
EXITS	REQUIRED EXITS = 1 ACUAL EXITS = 1



1 A102 CODE PLAN

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



2 A102 FLOOR PLAN

SCALE: 3/8" = 1'-0"

KEY NOTES

1. 8" CMU WALL, WATER REPELLENT FULL EXTENT
2. HM DOOR AND FRAME, PAINT, RE: DOOR SCHEDULE
3. EQUIPMENT, RE: MECH
4. CONCRETE PAD, RE: CIVIL
5. FIRE EXTINGUISHER
6. INLINE EXHAUST FAN, MOTORIZED DAMPER, AND LOUVER, RE: MECH
7. 5' LONG CONCRETE SPLASHBLOCK
8. ELECTRICAL EQUIPMENT, RE: ELEC
9. FLOOR DRAIN, RE: MECH

CHEMICAL TABLE

CHEMICAL				HAZARD						MAX ALLOWABLE QUANTITY PER CONTROL AREA				NFPA 704 IDENTIFICATION			
NAME	CAS NUMBER	OTHER NAME	FORMULA	TYPE	CLASSIFICATION	STATE	SOLUTION STRENGTH	ACTUAL AMOUNT	CONTAINER	BASIC	SPRINKLERED BUILDING OR CABINETS	SPRINKLERED BUILDING AND CABINETS	OCCUPANCY	HEALTH	FIRE	REACTIVITY	SPECIFIC
CHLORINE	7782-50-5	---	Cl-	PHYSICAL HEALTH	GAS-LIQUEFIED CORROSIVE	GAS	100%	150 LBS	500 GAL	500 LBS	1,000 LBS	2,000 LBS	F-2	3	0	0	OX

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www.shortbrennan.com

STATE OF COLORADO
GREGORY T. SHORT
400008
4/1/22
LICENSED ARCHITECT

CONSTRUCTION ISSUE

NAVAJO TRIBAL UTILITY AUTHORITY
UTILITIES FOR THE NAVAJO NATION

DILKON PASS PIPELINE AND PUMP STATION

REVISIONS

REV	DATE	DESCRIPTION

LINE IS 2 INCHES AT FULL SIZE

DESIGNED: K. WOESSNER
DRAWN: K. WOESSNER
CHECKED: G. SHORT
CHECKED: ----
APPROVED: G. SHORT

FILENAME
DILKON PUMP STATION_A_BASE

BC PROJECT NUMBER
157520

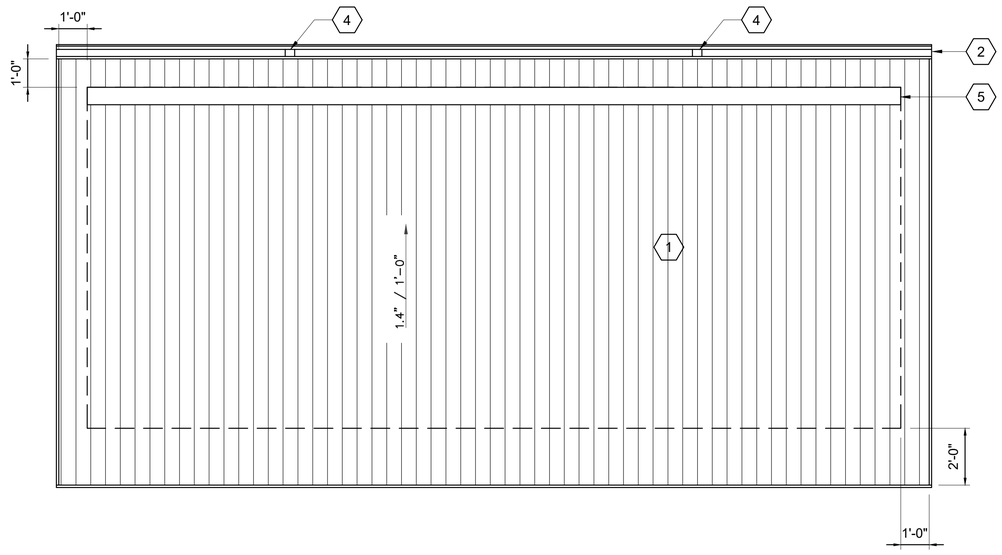
CLIENT PROJECT NUMBER
00357.21

ARCH

CODE & FLOOR PLAN

DRAWING NUMBER
A-101

41 SHEET NUMBER OF 59



3 A102 ROOF PLAN

SCALE: 3/8" = 1'-0"

KEY NOTES

1. STANDING SEAM METAL ROOF PANEL
2. GUTTER - PRE-FINISHED SHEET METAL
3. FASCIA - PRE-FINISHED SHEET METAL
4. DOWNSPOUT - PRE-FINISHED SHEET METAL
5. SNOWGUARD

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NTUA

DILKON PASS PIPELINE AND PUMP STATION

REVISIONS

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DESIGNED: K. WOESSNER
DRAWN: K. WOESSNER
CHECKED: G. SHORT
CHECKED: ----
APPROVED: G. SHORT

FILENAME
DILKON PUMP STATION_A_BASE

BC PROJECT NUMBER
157520

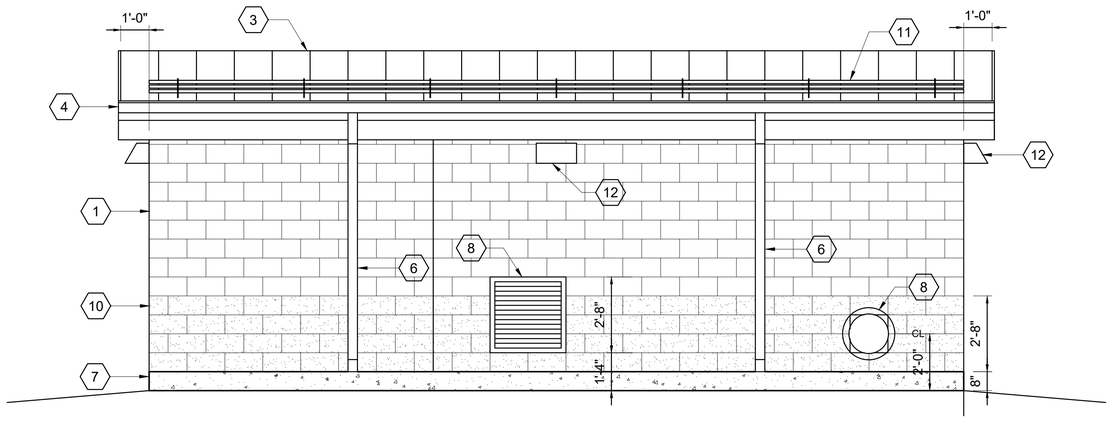
CLIENT PROJECT NUMBER
00357.21

ARCH

ROOF PLAN

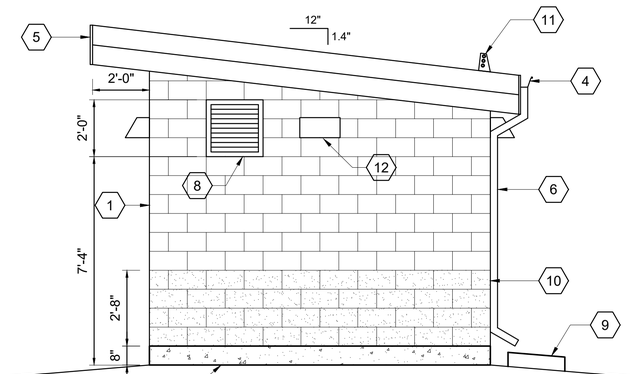
DRAWING NUMBER
A-102

SHEET NUMBER 42 OF 59



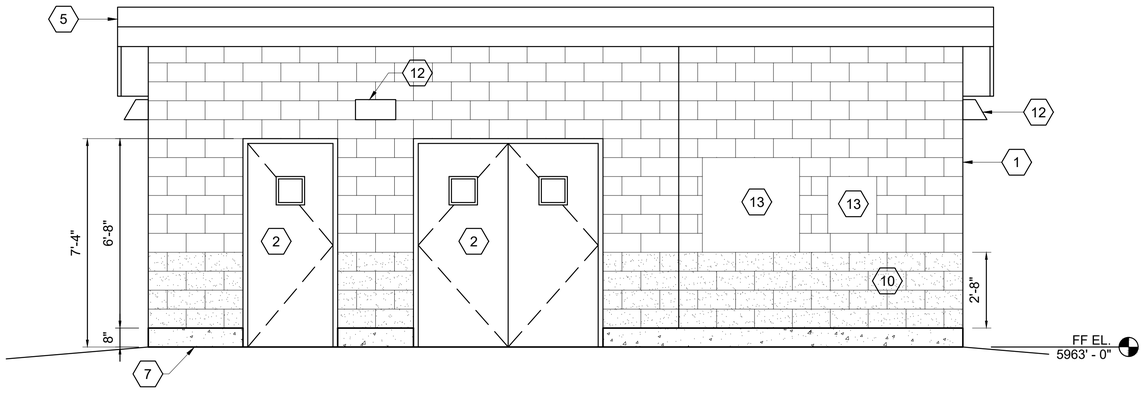
1 A201 NORTH ELEVATION

3/8"=1'-0"



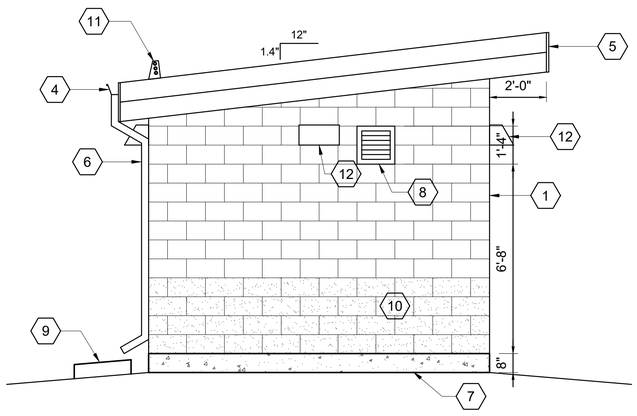
2 A201 EAST ELEVATION

3/8"=1'-0"



3 A201 SOUTH ELEVATION

3/8"=1'-0"



4 A201 WEST ELEVATION

3/8"=1'-0"

KEY NOTES

1. 8" CMU WALL, SMOOTH FACE, WATER REPELLENT FULL EXTENT, COLOR A
2. HM DOOR AND FRAME, PAINT, RE: DOOR SCHEDULE
3. STANDING SEAM METAL ROOF OVER METAL DECK
4. GUTTER - PRE-FINISHED SHEET METAL
5. FASCIA - PRE-FINISHED SHEET METAL
6. DOWNSPOUT - PRE-FINISHED SHEET METAL
7. CONCRETE CURB, RE: STRUCT
8. INLINE EXHAUST FAN, MOTORIZED DAMPER, AND LOUVER, RE: MECH
9. CONCRETE SPLASHBLOCK
10. 8" CMU WALL, SPLIT FACE, WATER REPELLENT FULL EXTENT, COLOR B
11. SNOWGUARD
12. EXTERIOR LIGHTING, RE: ELEC
13. ELECTRICAL EQUIPMENT, RE: ELEC

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4/1/22
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NAVAJO TRIBAL UTILITY AUTHORITY
UTILITIES FOR THE NAVAJO NATION

DILKON PASS PIPELINE AND PUMP STATION

REVISIONS

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DRAWN: K. WOESSNER
CHECKED: G. SHORT
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FILENAME
DILKON PUMP STATION_A_BASE

BC PROJECT NUMBER
157520

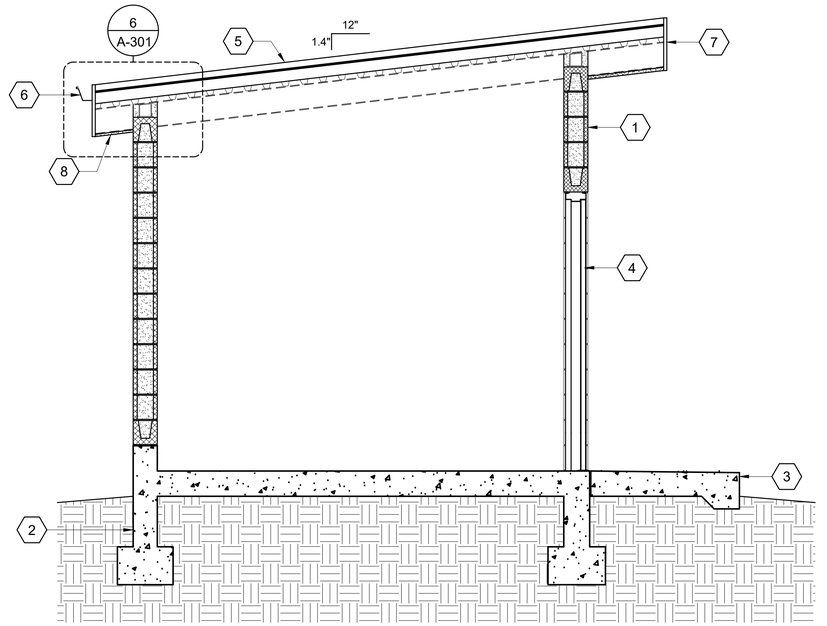
CLIENT PROJECT NUMBER
00357.21

ARCH

BUILDING ELEVATIONS

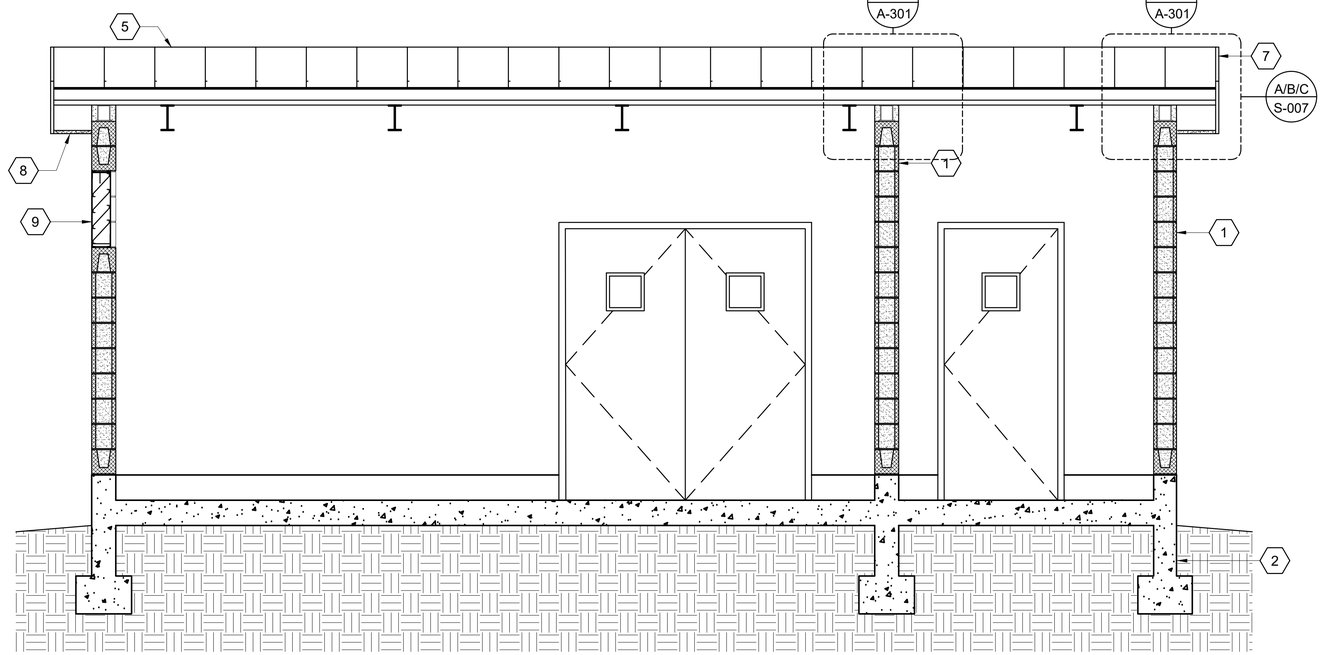
DRAWING NUMBER
A-201

SHEET NUMBER 43 OF 59



1 A202 BUILDING SECTION

1/2"=1'-0"



2 A202 BUILDING SECTION

1/2"=1'-0"

KEY NOTES

1. 8" CMU WALL, WATER REPELLENT FULL EXTENT
2. CONCRETE FOUNDATION, RE: STRUCT
3. CONCRETE PAD, RE: CIVIL
4. HM DOOR AND FRAME, PAINT, RE: DOOR SCHEDULE
5. STANDING SEAM METAL ROOF ON 2 LAYERS 30# BUILDING FELT OVER SELF-ADHERING UNDERLAYMENT, 4" NAILBASE INSULATION, AND METAL FRAMING
6. GUTTER - PRE-FINISHED SHEET METAL
7. FASCIA - PRE-FINISHED SHEET METAL
8. SOFFIT - PRE-FINISHED SHEET METAL
9. INLINE EXHAUST FAN, MOTORIZED DAMPER, AND LOUVER, RE: MECH

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DRAWN:	K. WOESSNER
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FILENAME
DILKON PUMP STATION_A_BASE

BC PROJECT NUMBER
157520

CLIENT PROJECT NUMBER
00357.21

ARCH

BUILDING SECTIONS

DRAWING NUMBER
A-202

SHEET NUMBER 44 OF 59

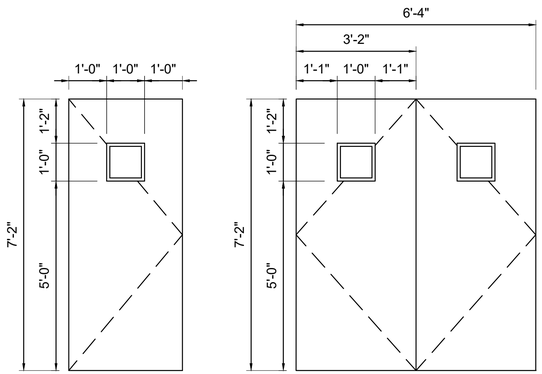
DOOR SCHEDULE

D / 13 — DOOR DESIGNATION / DOOR NUMBER

DOOR SCHEDULE NOTES:

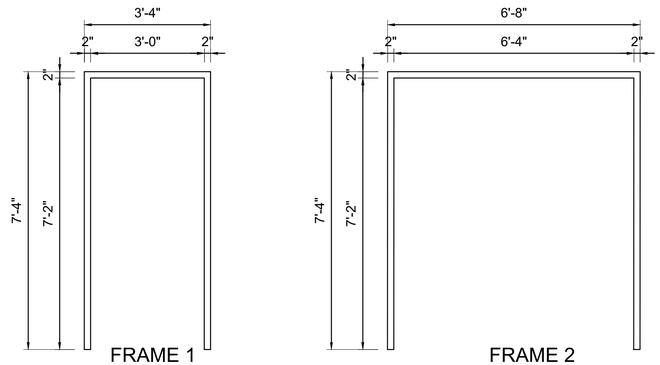
DOORS							GEN.	FRAMES						
DOOR NO.	TYPE	DIMENSIONS W	DIMENSIONS H	DIMENSIONS TH	MATERIAL	FINISH	HDWRE	TYPE	DETAILS SILL	DETAILS HEAD	DETAILS JAMB	MATERIAL	FINISH	REMARKS / RATING
1	A	3'-0"	7'-2"	1-3/4"	HM	PAINT	1	1	3/A301	1/A301	2/A301	HM	PAINT	---
2	B	6'-4"	7'-2"	1-3/4"	HM	PAINT	2	2	3/A301	1/A301	2/A301	HM	PAINT	---

CLEAR INSULATING GLASS:
1. OVERALL UNIT THICKNESS: 1 INCH
2. MINIMUM THICKNESS OF EACH GLASS LITE: 6 MM
3. OUTDOOR LITE: FULLY TEMPERED FLOAT GLASS
4. INTERSPACE CONTENT: AIR
5. INDOOR LITE: FULLY TEMPERED FLOAT GLASS
6. SAFETY GLAZING REQUIRED



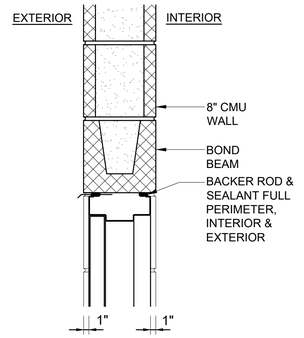
DOOR A DOOR B

DOOR ELEVATIONS 1/2"=1'-0"

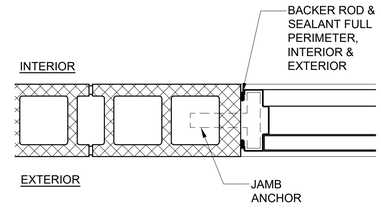


FRAME 1 FRAME 2

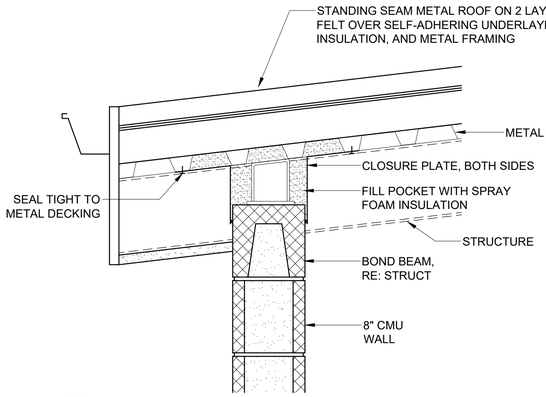
FRAME ELEVATION 1/2"=1'-0"



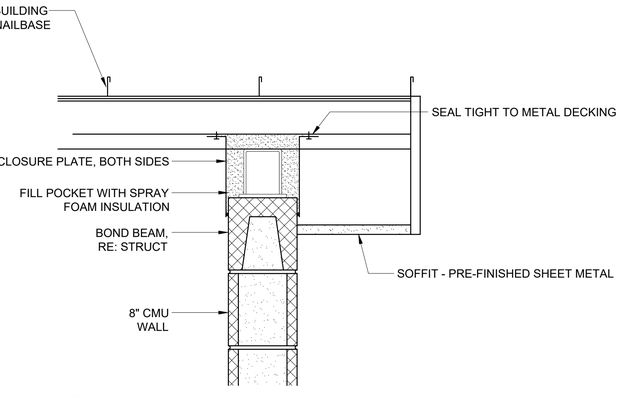
1 / A301 DOOR HEAD DETAIL 1-1/2"=1'-0"



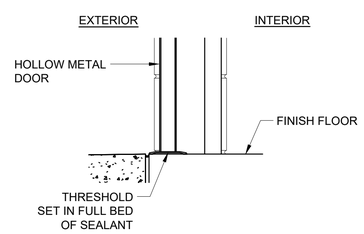
2 / A301 DOOR JAMB DETAIL 1-1/2"=1'-0"



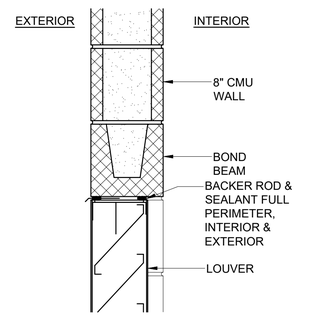
6 / A301 WALL DETAIL AT EAVE 1-1/2"=1'-0"



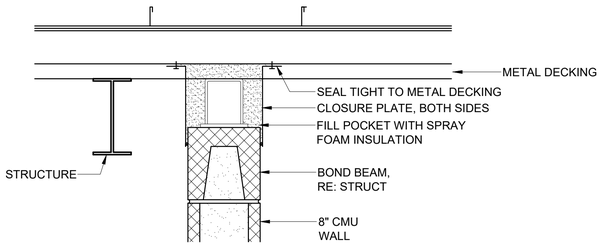
7 / A301 WALL DETAIL AT RAKE 1-1/2"=1'-0"



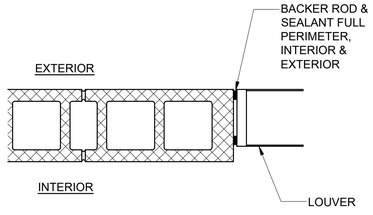
3 / A301 DOOR SILL DETAIL 1-1/2"=1'-0"



4 / A301 LOUVER HEAD/SILL DETAIL 1-1/2"=1'-0"



8 / A301 WALL DETAIL AT INTERIOR 1-1/2"=1'-0"



5 / A301 LOUVER JAMB DETAIL 1-1/2"=1'-0"

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LICENSED ARCHITECT

CONSTRUCTION ISSUE

NAVAJO TRIBAL UTILITY AUTHORITY
UTILITIES FOR THE NAVAJO NATION

DILKON PASS PIPELINE AND PUMP STATION

REVISIONS

REV	DATE	DESCRIPTION

LINE IS 2 INCHES AT FULL SIZE

DESIGNED: K. WOESSNER
DRAWN: K. WOESSNER
CHECKED: G. SHORT
CHECKED: ----
APPROVED: G. SHORT
FILENAME: DILKON PUMP STATION_A_BASE
BC PROJECT NUMBER: 157520
CLIENT PROJECT NUMBER: 00357.21

ARCH

DOOR SCHEDULE AND DETAILS

DRAWING NUMBER
A-301

45 SHEET NUMBER OF 59

Path: C:\USERS\KWOESSNER\DDTS CLOUD SYNC FOLDER\BUSINESS DEVELOPMENT\DILKON\2-DD (CURRENT)\DRAWINGS\DILKON PASS PUMP STATION_2022.3.3 FILENAME: DILKON PUMP STATION_A_BASE.DWG PLOT DATE: 3/4/2022 9:20 AM CAD USER: KATIE WOESSNER

SYMBOLS:

CIRCUIT AND RACEWAYS:

- RACEWAY OR WIRING SYSTEM ABOVE FLOOR LEVEL BELOW CEILING, EXPOSED, UON.
- RACEWAY OR WIRING SYSTEM ABOVE FLOOR LEVEL. CONCEALED IN WALL OR ABOVE CEILING, UON.
- RACEWAY OR WIRING SYSTEM IN OR UNDER FLOOR, OR CONCEALED IN OR BEHIND STRUCTURE OR EQUIPMENT, OR CONDUIT ROUTED BELOW GRADE IN CONCRETE ENCASEMENT.
- ELECTRICAL DUCTBANK
- EMH — ELECTRICAL MANHOLE
- EPB, IPB — ELECTRICAL PULLBOX, INSTRUMENT PULLBOX.
- PNL-A-1,3,5 — HOME RUN: DESIGNATIONS INDICATE A ONE-LINE DIAGRAM OR PANELBOARD SCHEDULE REFERENCE. EXAMPLE: TO PANELBOARD PNL-A, CIRCUITS 1, 3, AND 5.
- RACEWAY OR WIRING SYSTEM: UP ON PLAN DRAWINGS
- RACEWAY OR WIRING SYSTEM: DOWN ON PLAN DRAWINGS
- RACEWAY OR WIRING SYSTEM CHANGE IN ELEVATION
- EMPTY CONDUIT STUB AND CAP
- SHH23 — SIGNAL (S), LOW VOLTAGE (L), OR MEDIUM VOLTAGE (M), HANDHOLE (HH) OR MANHOLE (MH) WITH DESIGNATION. EXAMPLE: SIGNAL HANDHOLE NUMBER 23.
- JB 2700A — JUNCTION BOX WITH OPTIONAL IDENTIFIER.
- JUNCTION BOX, WALL MOUNTED.
- TB 1035 — TERMINAL BOX WITH OPTIONAL IDENTIFIER EXAMPLE: TERMINAL BOX #1035

GROUNDING:

- GROUND ROD, 3/4" x 10'-0", COPPERCLAD
- GROUND ROD AND TEST WELL
- LIGHTNING ROD
- GROUND CONNECTION
- G — G — GROUNDING SYSTEM CONDUCTOR
- L — L — LIGHTNING SYSTEM CONDUCTOR
- G — EQUIPMENT GROUND PLATE
- OHE — OHE — OVERHEAD POWER LINE

METERING (ANSI/IEEE FUNCTIONS AS SPECIFIED):

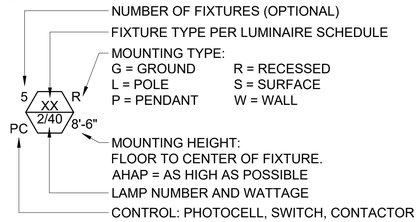
- ID# — POWER MONITOR (PM), POWER QUALITY MONITOR (HARMONIC ANALYSIS) (PQM), MOTOR MONITOR AND PROTECTION RELAY (MPR), FEEDER PROTECTION RELAY (FPR)

POWER DISTRIBUTION EQUIPMENT:

APPROXIMATE SHAPE AND SCALE WITH ESTIMATED SIZE AND NUMBER OF SECTIONS

- FLOOR MOUNTED SWITCHBOARD OR MOTOR CONTROL CENTER
- MCC 1100 OR MCC-M — EQUIPMENT NUMBER
- WALL MOUNTED PANELBOARD OR CABINET
- PBD 1200 — EQUIPMENT NUMBER

LUMINARIES:



- RECESSED MOUNTED FIXTURE
- SUSPENDED PENDANT MOUNTED FIXTURE
- SURFACE MOUNTED FIXTURE
- RECESSED, SURFACE OR PENDANT
- WALL MOUNTED
- DIRECTIONAL LIGHT
- POLE-MOUNTED AREA LIGHT: ONE POLE AND TWO FIXTURES SHOWN
- EMERGENCY LIGHTING UNIT WITH BATTERY CHARGER

EXIT LIGHTS WITH DARK QUADRANTS INDICATE ILLUMINATED FACES:

- SURFACE ON CEILING
- WALL MOUNTED
- EXIT DIRECTIONAL ARROWS

LIGHTING CONTROL AND CIRCUITING:

- 3a — LIGHTING CIRCUIT IDENTIFIER: 3a INDICATES FIXTURE POWERED FROM CIRCUIT 3 AND CONTROLLED BY SWITCH a
- NL — EMERGENCY LIGHTING FIXTURES WITH EMERGENCY BALLAST. NL = UNSWITCHED POWER SOURCE
- PCU — PHOTOELECTRIC CONTROL UNIT

CIRCUIT IDENTIFICATION:

P101-1: 3-1/0, 6G, 2"C	CIRCUIT P101-1: THREE 1/0 CONDUCTORS, ONE NO. 6 AWG GROUND WIRE IN 2" CONDUIT
P101-2: 2 [3-1/0, 6G, 2"C]	P101-2: TWO PARALLEL SETS OF THREE 1/0 CONDUCTORS, ONE NO. 6 AWG GROUND EACH IN 2" CONDUIT
C113: 12/C #14, 2"C	CONTROL CIRCUIT C113: ONE-TWELVE CONDUCTOR #14 AWG CONTROL CABLE
S111: 2-1 PR #16S, 1"C	SIGNAL CIRCUIT S111: TWO SIGNAL CABLES OF ONE PAIR 16 AWG TWISTED SHIELDED CABLES IN 1" CONDUIT
S112: 1-4 PR #16S, 1"C	SIGNAL CIRCUIT S112: ONE - FOUR PAIR 16 AWG SHIELDED IN 1" CONDUIT

TELEPHONE SYSTEMS:

- EXTERNAL LINE OR PLANT PHONE SYSTEM OUTLET

WIRING DEVICES:

SWITCHES:

- $ — SINGLE POLE SWITCH.
- $$ — GANGED SWITCHES IN COMMON BOX WITH COMMON WALL PLATE
- $ with a, 3 — SWITCH SUPERSCRIPT MODIFIER: LOWER CASE LETTER INDICATES LUMINAIRE CONTROLLED (I.E. a, b, c, ect). MAY BE COMBINED WITH CIRCUIT NUMBER (I.E. 1a, 4b, ect.)
- SWITCH SUBSCRIPT MODIFIER: UPPER CASE LETTER OR NUMBER
  - 2 = DOUBLE POLE
  - 3 = THREE WAY
  - 4 = FOUR WAY
  - K = KEY OPERATED
  - M = HORSEPOWER RATED MANUAL STARTER
  - MC = MOMENTARY CONTACT, THREE POSITION
  - MS = MANUAL (MOTOR) STARTER OR SWITCH
  - R = RHEOSTAT (DIMMER OR SPEED CONTROL)
  - F = FLUSH MOUNTED
  - WP = WEATHERPROOF

RECEPTACLES:

- 3, GF — SINGLE STROKE - SINGLE OUTLET; DOUBLE STROKE - DUPLEX OUTLET
- RECEPTACLE MODIFIERS:
  - 3 = BRANCH CIRCUIT NUMBER
  - C = CLOCK HANGER
  - GF = GROUND FAULT CIRCUIT INTERRUPTER
  - WP = WEATHERPROOF
- 480V RECEPTACLE
- 10-50R — SPECIAL RECEPTACLE. RATING OR NEMA CONFIGURATION. EXAMPLE: NEMA 10-50R, 125/250V, 3 POLE, 3 WIRE, 50 AMP, NON-GROUNDING TYPE
- RECESSED FLOOR RECEPTACLE
- SURFACE FLOOR RECEPTACLE
- GANGED RECEPTACLES: IN COMMON BOX WITH COMMON WALL PLATE

EQUIPMENT AND AREA CLASSIFICATIONS:

- M — MOTOR
- INDIVIDUAL MOTOR STARTER
- COMBINATION MOTOR STARTER
- 100A — NON-FUSED DISCONNECT: 100A, 3POLE
- F, 60A — FUSED DISCONNECT
- FIELD INSTRUMENT
- FIELD INSTRUMENT MOUNTED ON CONTROL STATION MOUNTING STAND. TYPICAL FOR ALL EQUIPMENT.
- CS — CONTROL STATION. CONFIGURATION ACCORDING TO CONTROL DIAGRAMS. REFER TO P&ID FOR HAND STATION EQUIVALENT DEVICES.
- HS 1311 — HAND STATION EQUIPMENT DESIGNATOR
- CI-D1 / CI-D2 — HAZARDOUS AREA CLASSIFICATION
- UNCLASSIFIED — UNCLASSIFIED AREA
- CORROSIVE — CORROSIVE AREA
- ANTENNA

ABBREVIATIONS:

NOTES:
1. ABBREVIATIONS SHOWN ON ELECTRICAL DRAWINGS ARE IN ACCORDANCE WITH ASME STANDARD Y14.38A
2. ABBREVIATIONS ON THIS SHEET ARE IN ADDITION TO THE ABBREVIATIONS DEFINED ON OTHER DRAWINGS.
3. ABBREVIATIONS HERE IN SHALL TAKE PRECEDENCE IN CASE OF CONFLICT.
4. ABBREVIATIONS ARE NOT EQUIPMENT NUMBERING PREFIXES LISTED ON OTHER DRAWINGS.

A, AMP	AMP(S), AMPERE(S)	HH	HANDHOLE	OWS	OPERATOR WORKSTATION
AC	ALTERNATING CURRENT	HID	HIGH INTENSITY DISCHARGE	P	POLE, PHASE
AFF	ABOVE FINISHED FLOOR	HP	HORSEPOWER	PB	PUSH-BUTTON, PULLBOX
AHAP	AS HIGH AS POSSIBLE	HPS	HIGH PRESSURE SODIUM	PCP	PROCESS CONTROL PANEL
AIC	AMPS INTERRUPTING CAPACITY, SYMM.	HTR	HEATER	PF	POWER FACTOR
AL	ALUMINUM	HV	HIGH VOLTAGE	PH	PHASE
ARCH	ARCHITECT(URAL)	HVAC	HEATING, VENTILATION, & AIR CONDITIONING	PLC	PROGRAMMABLE LOGIC CONTROLLER
ASYM	ASYMMETRICAL	HZ	HERTZ (CYCLES PER SECOND)	PMM	POWER MONITORING MODULE
AUTO	AUTOMATIC	I/O	INPUT / OUTPUT	PNL	PANEL
AUX	AUXILIARY	ICOM	INTERCOM	PP	POWER PANEL
AWG	AMERICAN WIRE GAUGE	ID	INSIDE DIAMETER	PRI	PRIMARY
BC	BARE COPPER	IMC	INDIVIDUAL MOTOR CONTROLLER	PT	POTENTIAL TRANSFORMER
BLDG	BUILDING	INCAND	INCANDESCENT	PVC	POLYVINYL CHLORIDE
BOT	BOTTOM	INST	INSTANTANEOUS, INSTRUMENT	PWR	POWER
C	CONDUCTOR, CONDUIT	INTLK	INTERLOCK	RCPT	RECEPTACLE
CB	CIRCUIT BREAKER	IPB	INSTRUMENT PULLBOX	RE STL	REINFORCED STEEL
CKT	CIRCUIT	JB	JUNCTION BOX	REF	REFERENCE
CLG	CEILING	KCMIL	1000 CIRCULAR MIL	REQD	REQUIRED
CM	CENTIMETERS	kV	KILOVOLT	RMS	ROOT MEAN SQUARE
CNTL	CONTROL	kVA	KILOVOLT-AMPERE	RTD	RESISTANCE TEMPERATURE DETECTOR
CONC	CONCRETE	KVAR	KILOVOLT-AMPERE REACTIVE	RTU	REMOTE TERMINAL UNIT
CPT	CONTROL POWER TRANSFORMER	KW	KILOWATT	SA	SURGE ARRESTOR
CT	CURRENT TRANSFORMER	KWH	KILOWATT HOUR	SCR	SILICON CONTROLLED RECTIFIER
CU	COPPER	L	LONG	SD	SMOKE DETECTOR
DB	DIRECT BURIAL	LA	LIGHTNING ARRESTOR	SEC	SECONDARY
DC	DIRECT CURRENT, DATA CABLE	LCP	LOCAL CONTROL PANEL	SEL	SELECTOR
DET	DETAIL	LT	LONG TIME	SPD	SURGE PROTECTIVE DEVICE
DIAG	DIAGRAM	LTG	LIGHTING	SPEC	SPECIFICATION
DISC	DISCONNECT	LV	LOW VOLTAGE	SPKR	SPEAKER
DWG	DRAWING	M	METER	ST	SHORT TIME
EA	EACH	MA	MILLIAMPERE	SUB	SUBSTATION
EC	EMPTY CONDUIT	MBS	MANUAL BYPASS SWITCH	SW	SWITCH
ECP	EQUIPMENT CONTROL PANEL	MCC	MOTOR CONTROL CENTER	SWBD	SWITCHBOARD
EDB	ELECTRICAL DUCTBANK	MCP	MOTOR CIRCUIT PROTECTOR	SWGR	SWITCHGEAR
EG	ENGINE GENERATOR SET	MECH	MECHANICAL	SYMM	SYMMETRICAL
EL	ELEVATION	MFR	MANUFACTURE	SYS	SYSTEM
ELEC	ELECTRIC(AL)	MH	MANHOLE, METAL HALIDE	TB	TERMINAL BOX
EMER	EMERGENCY	MIC	MICROPHONE	TEL	TELEPHONE
EMH	ELECTRICAL MANHOLE	MISC	MISCELLANEOUS	TEMP	TEMPERATURE
ENCL	ENCLOSURE / ENCLOSED	MM	MILLIMETER	TFR	TRANSFORMER
EP	EXPLOSION PROOF	MOV	MOTOR OPERATED VALVE	TRI	TRIAD
EPB	ELECTRICAL PULLBOX	MPC	MINI POWER CENTER	TV	TELEVISION
EQUIP	EQUIPMENT	MTS	MANUAL TRANSFER SWITCH	TYP	TYPICAL
EX	EXISTING	MV	MILLIVOLT, MEDIUM VOLTAGE	U/G	UNDERGROUND
F.O.	FAIL OPENED	MVMC	MEDIUM VOLTAGE MOTOR CONTROL	UON	UNLESS OTHERWISE NOTED
FDR	FEEDER	N.C.	NORMALLY CLOSED	UPS	UNINTERRUPTIBLE POWER SUPPLY
FL	FLUORESCENT	N.O.	NORMALLY OPENED	V	VOLT
FLA	FULL LOAD AMPS	N/A	NOT APPLICABLE	VA	VOLT-AMPERE
FLEX	FLEXIBLE CONDUIT	NEUT,N	NEUTRAL	VAR	VOLT-AMPERE REACTIVE
FM	FLOW METER	NF	NON-FUSED	VC	VACUUM CONTACTOR
FO	FIBER OPTIC	NIC	NOT IN CONTRACT	W	WATT, WIRE, WIDE
FUT	FUTURE	NO.	NUMBER	W/	WITH
GDR	GROUNDING RESISTOR	NOM	NOMINAL	W/O	WITHOUT
GEC	GROUND ELECTRODE CONDUCTOR	NP	NAMEPLATE	WG	WITH GROUND
GF	GROUND FAULT	NTS	NOT TO SCALE	WP	WEATHERPROOF
GFI	GROUND FAULT INTERRUPTER	OC	ON CENTER	WW	WIREWAY
GND, G	GROUND	OD	OUTSIDE DIAMETER	XMTR	TRANSMITTER
GRS	GALVANIZED RIGID STEEL	OH	OVERHEAD	Z	IMPEDANCE
H	HIGH	OIS	OPERATOR INTERFACE STATION		
HGT	HEIGHT	OT	OIL TIGHT		

Brown AND Caldwell

SALT LAKE CITY, UT

Professional Engineer — CERTIFICATE NO. 36697 — KENNETH W. CHANDLER — Date Signed 2/24/2022 — ARIZONA, U.S.A.

CONSTRUCTION ISSUE

NAVAJO TRIBAL UTILITY AUTHORITY — UTILITIES FOR THE NAVAJO NATION

DILKON PASS PIPELINE AND PUMP STATION

REVISIONS

REV	DATE	DESCRIPTION

LINE IS 2 INCHES AT FULL SIZE

DESIGNED: K. CHANDLER
DRAWN: D. EHMANN
CHECKED: H. PACE
CHECKED: ----
APPROVED: S. BRENCHLEY

FILENAME: E-001.dwg
BC PROJECT NUMBER: 157520
CLIENT PROJECT NUMBER

ELECTRICAL

SYMBOLS, ABBREVIATIONS AND NOTES

DRAWING NUMBER
E-001

SHEET NUMBER 46 OF 59

Path: C:\USERS\DEHMANN\BCPWD2344918 FILENAME: E-001.DWG PLOT DATE: 2/25/2022 1:51 PM CAD USER: DANIEL EHMANN

CONTROL DIAGRAMS:

LINEWORK:

- CONDUCTORS CONNECTED
- CONDUCTORS NOT CONNECTED

MISCELLANEOUS:

- MCP, 15 AMP — MOTOR CIRCUIT PROTECTOR (MCP) MAGNETIC-ONLY CIRCUIT BREAKER
- 15 AMP — THERMAL-MAGNETIC CIRCUIT BREAKER
- FU 2B, 15 AMP — FUSE WITH SIZE AND OPTIONAL IDENTIFICATION
- FU 2B, 15 AMP — FUSE WITH BLOWN FUSE INDICATOR
- SIZE — DISCONNECT SWITCH
- MTR — MOTOR (PHASES AS REQUIRED)
- SOLENOID VALVE OR OVERLOAD TRIP UNIT
- 250W — SPACE HEATER AND WATTAGE
- 480V / 120V, 250VA — CONTROL TRANSFORMER. PRIMARY & SECONDARY VOLTAGE SHOWN, SIZE OPTIONAL
- 50/3, CT (3) — CURRENT TRANSFORMER WITH PRIMARY / SECONDARY TURNS RATIO
- HORN / SIREN
- KVAR — POWER FACTOR CORRECTION CAPACITOR
- XX — MOTOR STARTER TERMINATION POINT
- XX — PLC I/O POINTS:
  - DO = DIGITAL OUT SIGNAL
  - DI = DIGITAL IN SIGNAL
  - AO = ANALOG OUT SIGNAL
  - AI = ANALOG IN SIGNAL

STATUS INDICATORS: SHOWN WITH DESCRIPTION AND COLOR (X):

- A = AMBER
- B = BLUE
- G = GREEN
- R = RED
- W = WHITE

INDICATORS:

- STATUS (X = COLOR)
- X1 — PUSH TO TEST
- TEST — REMOTE TEST
- BACK-LIT PUSH-BUTTON

DESCRIPTION (TYP)

COILS:

- C — LTG CTK #1
- CR 10 — AUTO ENABLE
- TR 9 — ON or OFF DELAY RANGE x to xx SEC/MIN SET AT x SEC/MIN
- U, L, LR 8

A) RELAYS OR CONTACTOR COILS WITH DESCRIPTION OR REFERENCE
- C = CONTACTOR, LIGHTING OR GENERAL USE
- F = FAST OR FORWARD
- IC = ISOLATION CONTACTOR
- M = MAIN OR LINE
- MO = MOTOR OPERATED
- R = RUN OR REVERSE
- S = SLOW OR START
- T = TRIP COIL
- 1M = FIRST MAIN OR WYE
- 2M = SECOND OR DELTA

B) RELAY COILS WITH NUMERIC PREFIX OR SUFFIX
- CR = CONTROL RELAY
- MR = MACHINE TOOL RELAY
- TR = TIMING RELAY

C) TIME DELAY COIL WITH NUMERIC PREFIX OR SUFFIX, DELAY ACTION, TIMING RANGE AND SETTING

D) MECHANICALLY LATCHED RELAY WITH UNLATCH COIL

- OL (SSOL) — THERMAL OVERLOAD RELAY OR SOLID STATE OVERLOAD RELAY
- A — METER WITH ALPHA IDENTIFIERS
  - ETM = ELAPSED TIME
  - A = AMMETER
  - V = VOLTMETER

POWER CONTACTORS:

- M, SIZE 3 — AIR-BREAK CONTACTOR WITH NEMA SIZE
- M, SIZE 6 — VACUUM CONTACTOR WITH NEMA SIZE
- M, SIZE 2 — REDUCED VOLTAGE SOLID STATE STARTER

SWITCH OR INTERLOCK CONTACTS:

NORMALLY OPEN (NO)	NORMALLY CLOSED (NC)	
CR12, LINE 12	CR9, LINE 25	CONTROL RELAY CONTACTS
TR3, TC, LINE 43 OR	TR4, TO, LINE 44 OR	ON DELAY (DELAY ON COIL ENERGIZATION) RELAY CONTACTS TC = NORMALLY OPEN, TIME CLOSED TO = NORMALLY CLOSED, TIME OPENED
TR5, TO, LINE 45 OR	TR6, TC, LINE 46 OR	OFF DELAY (DELAY ON COIL DE-ENERGIZATION) RELAY CONTACTS TO = NORMALLY OPEN, TIME OPENED TC = NORMALLY CLOSED, TIME CLOSED
TR5, INST, LINE 45	TR6, INST, LINE 46	TIME DELAY RELAY INSTANTANEOUS CONTACTS

SWITCHES: (SHOWN WITH OPTIONAL LOCATION REFERENCE)

NORMALLY OPEN (NO)	NORMALLY CLOSED (NC)	
5ZS, VALVE FV010	1ZS, VALVE FV0101	LIMIT: FREE
3ZS, VALVE FV0101	7ZS, VALVE FV0101	LIMIT: HELD
FS3	FS3	FLOW
TS1	TS1	TEMPERATURE
PS1	PS1	PRESSURE
LS5	LS5	LEVEL
WS2	WS2	FORCE OR TORQUE
SS1	SS1	SPEED
HSxxx, AT PNLxxx	HSxxx, AT PNLxxx	MOMENTARY PUSH-BUTTON
STOP, AT DRIVE		MUSHROOM HEAD MOMENTARY PUSH-BUTTON
OFF, ON, DESCRIPTION		MAINTAINED PUSH-BUTTON OR ROCKER SWITCH
1, 2, OX, AT PNLxxx		SELECTOR SWITCH: 2 POSITION MAINTAINED SWITCH POSITION X = CLOSED CONTACT O = OPEN CONTACT
1, 2, XO, OX, AT PNLxxx		SELECTOR SWITCH: 2 POSITION SPRING RETURN X = CLOSED CONTACT O = OPEN CONTACT
1, 2, 3, XOO, OOX, AT PNLxxx		SELECTOR SWITCH: 3 POSITION X = CLOSED CONTACT O = OPEN CONTACT

ONE LINE DIAGRAMS:

- CIRCUIT ROUTED IN UNDERGROUND DUCTBANK
- 12kV — INCOMING POWER SUPPLY
- CABLE TERMINATION: STRESS CONE FOR SHIELDED CABLES.
- LIGHTNING ARRESTOR
- SURGE ARRESTOR
- BUS DUCT OR BUSWAY
- 52A — STAB OR PULL-APART CONNECTION.
- 200A — AIR CIRCUIT BREAKER: TRIP RATING AND I.D.
- 3P, 400AT, 400AF, LSIG — AIR CIRCUIT BREAKER: BREAKER FRAME RATING / TRIP SETTING. SOLID STATE TRIP FEATURES SHOWN: L = LONG DELAY, S = SHORT DELAY, I = INSTANTANEOUS, G = GROUND FAULT
- 52-G1, E, 1000AT, 1200AF — POWER CIRCUIT BREAKER FRAME AND TRIP SETTING AND I.D. SHOWN
- 100A — POWER DISCONNECT OR ISOLATION SWITCH: CONTINUOUS RATING SHOWN. 30A, 3P
- F, OR, 100E, 200A — FUSED SWITCH: WITH TYPE AND RATINGS
- 1500 KVA, 13.2 KV - 480V, 3Ø, 4W — POWER TRANSFORMER: DESIGNATION, SIZE, PRIMARY AND SECONDARY VOLTAGES, AND WINDING CONFIGURATION
- WINDING CONFIGURATION: DELTA
- WYE (GROUNDED)
- 4160V - 120V — POTENTIAL TRANSFORMER WITH PRIMARY AND SECONDARY VOLTAGES AND WINDINGS QUANTITIES
- 250/5 — CURRENT TRANSFORMER: RATIO, QUANTITIES
- xS — METER SWITCH:
  - AS = AMMETER SWITCH
  - VS = VOLTMETER SWITCH
- A, 0 - 1000 AMPS — METER WITH RANGE:
  - A = AMMETER
  - W = WATTMETER
  - KWH = KILOWATT-HOUR METER
  - F = FREQUENCY METER
  - VAR = VAR METER
  - V = VOLTMETER
- 64 N — ANSI C37.2 DEVICE WITH QUANTITIES
- 600kW, 60 HZ — 480V, 3P,4W — G — OR — GENERATOR WITH RATING
- GDR — 50 AMP, 10 SEC — NEUTRAL GROUNDING RESISTOR: CURRENT / TIME RATING SHOWN
- K — KEY INTERLOCK

- 5 — MOTOR WITH HORSEPOWER
- NORMAL / EMERGENCY, MTS10, 60A, 3P, LOAD — POWER TRANSFER SWITCH WITH DESIGNATIONS, RATING AND CONFIGURATION
  - MTS = MANUAL TRANSFER SWITCH
  - ATS = AUTOMATIC TRANSFER SWITCH
- FVNR, 31 — MOTOR CONTACTOR (SIZE 1)
  - FVR = FULL VOLTAGE, REVERSING STARTER
  - FVNR = FULL VOLTAGE NON-REVERSING
  - RVSS = REDUCED VOLTAGE SOLID-STATE
  - 2S2W = TWO SPEED, TWO WINDING STARTER
- GROUND ROD ELECTRODE
- CONTROL STATION PER CONTROL DIAGRAMS
- FIELD INSTRUMENT OR DEVICE
- 55 KVAR — POWER FACTOR CORRECTION CAPACITOR: KVAR RATING

GENERAL NOTES:

1. SYMBOLS AND ABBREVIATION DRAWINGS ARE GENERAL IN NATURE
2. NOT ALL SYMBOLS OR ABBREVIATIONS SHOWN ON DRAWINGS E-001 AND E-002 ARE USED IN SUBSEQUENT DRAWINGS.

Brown AND Caldwell
SALT LAKE CITY, UT

Professional Engineer — CERTIFICATE NO. 36697 — KENNETH W. CHANDLER — Date Signed 2/24/2022 — ARIZONA, U.S.A.

CONSTRUCTION ISSUE

NAVAJO TRIBAL UTILITY AUTHORITY — UTILITIES FOR THE NAVAJO NATION

DILKON PASS PIPELINE AND PUMP STATION

REVISIONS

REV	DATE	DESCRIPTION

LINE IS 2 INCHES AT FULL SIZE

DESIGNED:	K. CHANDLER
DRAWN:	D. EHMANN
CHECKED:	H. PACE
CHECKED:	----
APPROVED:	S. BRENCHLEY
FILENAME	E-002.dwg
BC PROJECT NUMBER	157520
CLIENT PROJECT NUMBER	

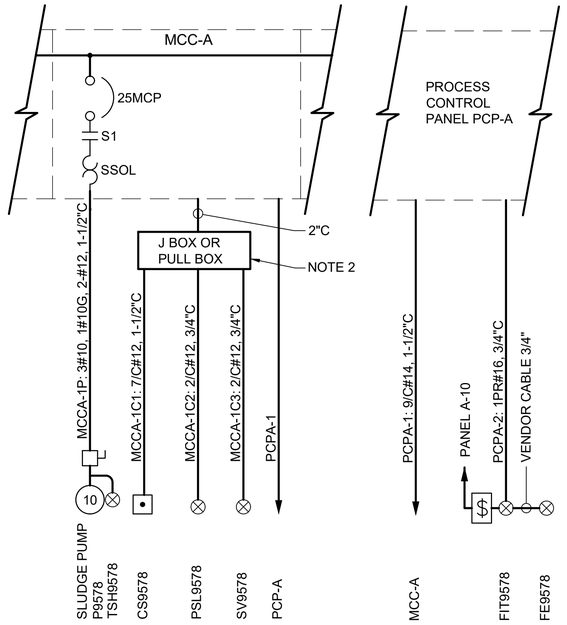
ELECTRICAL

CONTROL AND ONE-LINE DIAGRAM LEGENDS AND SYMBOLS

DRAWING NUMBER
E-002

SHEET NUMBER 47 OF 59

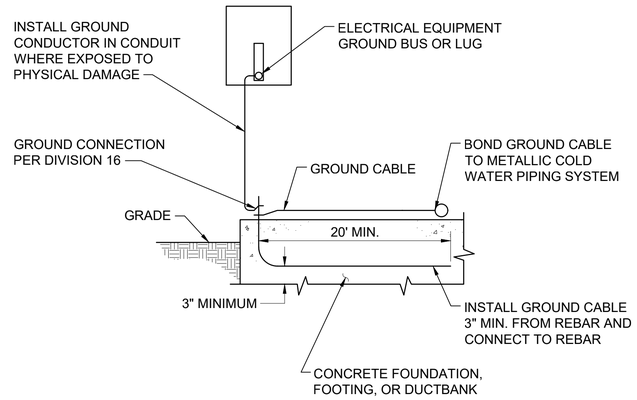
Path: C:\USERS\DEHMANN\BCPWD2344918 FILENAME: E-002.DWG PLOT DATE: 2/25/2022 1:51 PM CAD USER: DANIEL EHMANN



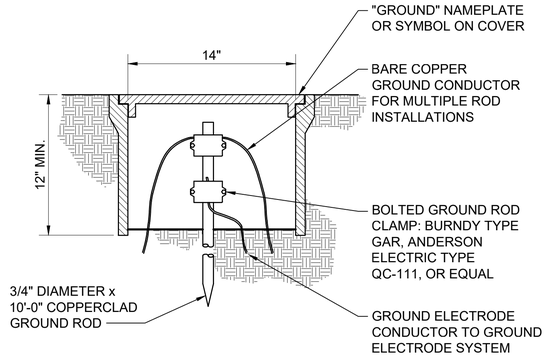
NOTES:

1. MOTOR CONTROL CENTER AND PROCESS CONTROL PANEL HOMERUN CIRCUIT DESIGNATIONS: REFER TO PLAN DRAWINGS.
2. PROVIDE TERMINATION BOX, PULL BOX FITTINGS, OR DUCTBANK TRANSITION, AS REQUIRED.

SINGLE-LINE DIAGRAM
TYPICAL
DETAIL E1001
NO SCALE



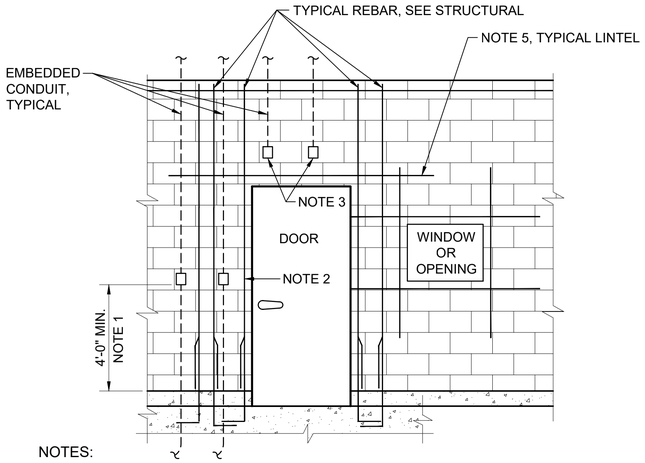
GROUND ELECTRODE
CONCRETE ENCASED
DETAIL E3001
NO SCALE



NOTES:

1. TEST WELL OF CONCRETE, PVC, OR FRP MATERIAL.
2. H-20 LOAD RATED COVER FOR TEST WELL IN TRAFFIC AREA.

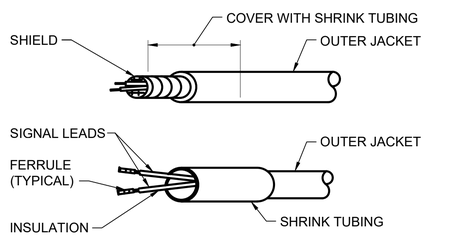
GROUND ELECTRODE
TEST WELL
DETAIL E3002
NO SCALE



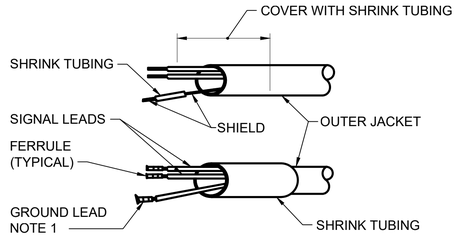
NOTES:

1. ALL EMBEDDED BOXES ABOVE GROUT LIFTS, AND BOND BEAMS.
2. EMBEDDED BOXES ARE NOT ALLOWED IN WALL BLOCK CELLS WITH VERTICAL REBAR.
3. EMBEDDED BOXES FOR EXIT LIGHTS, FIRE ALARMS, INTRUSION SWITCHES, ETC. ABOVE HORIZONTAL LINTEL. SEE STRUCTURAL FOR LINTEL HEIGHTS.
4. CUT OPENINGS IN CMU FOR EMBEDDED BOXES.
5. HORIZONTAL CONDUIT RUNS ARE NOT ALLOWED IN BOND BEAM OR LINTEL.
6. ELECTRICAL EQUIPMENT WEIGHING OVER 200 POUNDS MAY NOT BE ATTACHED TO WALLS. PROVIDE EQUIPMENT RACK PER DETAIL E4001.

EMBEDDED RACEWAYS
CMU WALLS
DETAIL E2211
NO SCALE



INSTRUMENT TERMINATION



PANEL TERMINATION

NOTE:

1. GROUND SHIELD AT PANEL NOT AT INSTRUMENT.

SHIELDED CABLE TERMINATION
DETAIL E / TYP.
NO SCALE

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SALT LAKE CITY, UT

Certified Professional Engineer (Electrical) CERTIFICATE NO. 36697 KENNETH W. CHANDLER Date Signed 3/24/2022 ARIZONA, U.S.A.

CONSTRUCTION ISSUE

NAVAJO TRIBAL UTILITY AUTHORITY NTUA UTILITIES FOR THE NAVAJO NATION

DILKON PASS
PIPELINE AND
PUMP STATION

REVISIONS

REV	DATE	DESCRIPTION

LINE IS 2 INCHES AT FULL SIZE

DESIGNED: K. CHANDLER
DRAWN: D. EHMANN
CHECKED: H. PACE
CHECKED: ----
APPROVED: S. BRENCHLEY
FILENAME
E-003.dwg
BC PROJECT NUMBER
157520
CLIENT PROJECT NUMBER

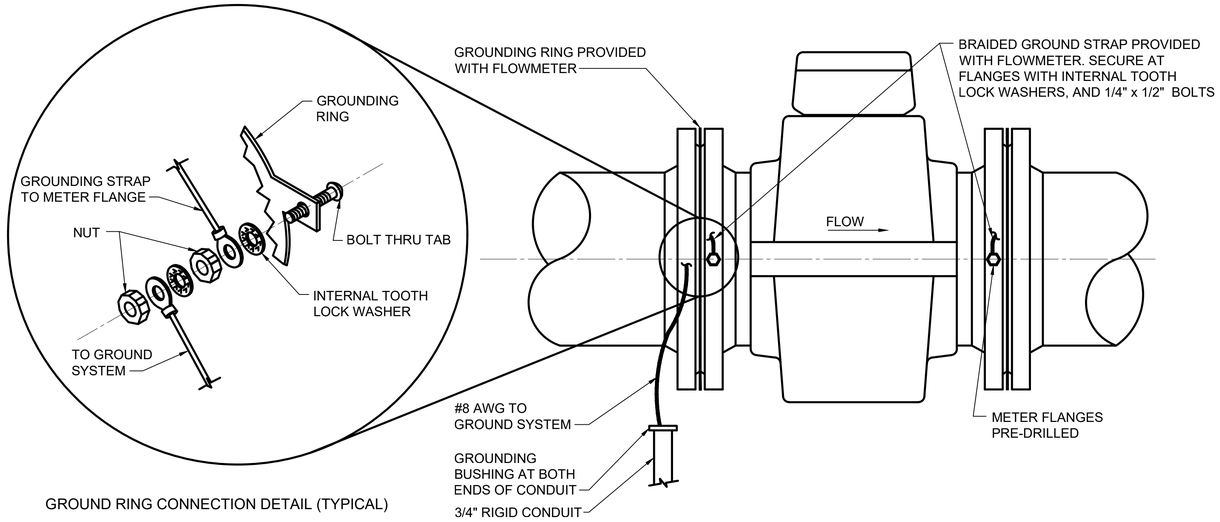
ELECTRICAL

STANDARD DETAILS
1

DRAWING NUMBER
E-003

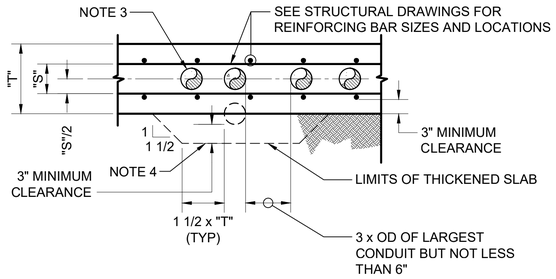
48 SHEET NUMBER OF 59

Path: C:\USERS\DEHMANN\BCPWD2344918 FILENAME: E-003.DWG PLOT DATE: 2/25/2022 1:51 PM CAD USER: DANIEL EHMANN

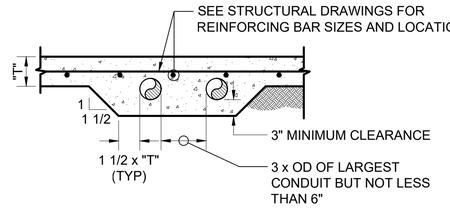


GROUND RING CONNECTION DETAIL (TYPICAL)

FLOW TRANSMITTER
MAGNETIC - GROUNDING
DETAIL I4001
SCALE: NONE



DOUBLE MAT REINFORCEMENT

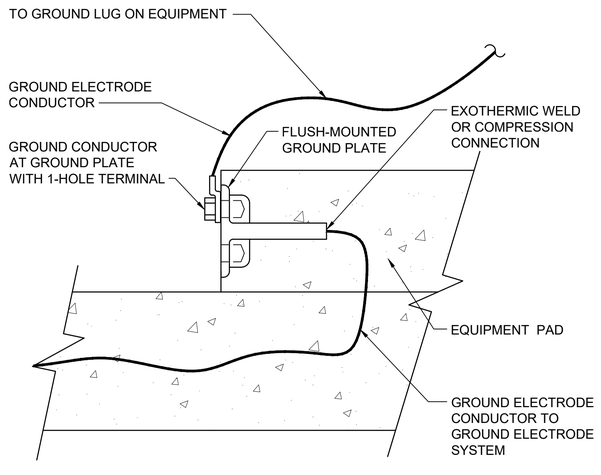


SINGLE MAT REINFORCEMENT

NOTES

1. OD = OUTSIDE DIAMETER OF CONDUIT.
2. "S" = CLEAR SPACE BETWEEN REINFORCING.
3. MAXIMUM OD = T/4 OR S - 1/2".
4. PLACE CONDUIT UNDER SLAB AND ENCASE IN CONCRETE WHERE OD GREATER THAN T/4 OR S - 1/2".
5. PROVIDE PVC OR PVC COATED CONDUITS WHERE IN CONTACT WITH REINFORCING.

EMBEDDED RACEWAYS
SLAB ON GRADE
DETAIL E2202
SCALE: NONE



EQUIPMENT GROUNDING
GROUND PLATE IN SLAB
DETAIL E3101
SCALE: NONE

NOTE:
1. REQUIRED AT ELECTRICAL EQUIPMENT

Brown AND Caldwell
SALT LAKE CITY, UT

Certified Professional Engineer (Electrical) CERTIFICATE NO. 36697 KENNETH W. CHANDLER Date Signed 3/24/2022 ARIZONA, U.S.A.

CONSTRUCTION ISSUE

NAVAJO TRIBAL UTILITY AUTHORITY NTUA UTILITIES FOR THE NAVAJO NATION

DILKON PASS PIPELINE AND PUMP STATION

REVISIONS

REV	DATE	DESCRIPTION

LINE IS 2 INCHES AT FULL SIZE

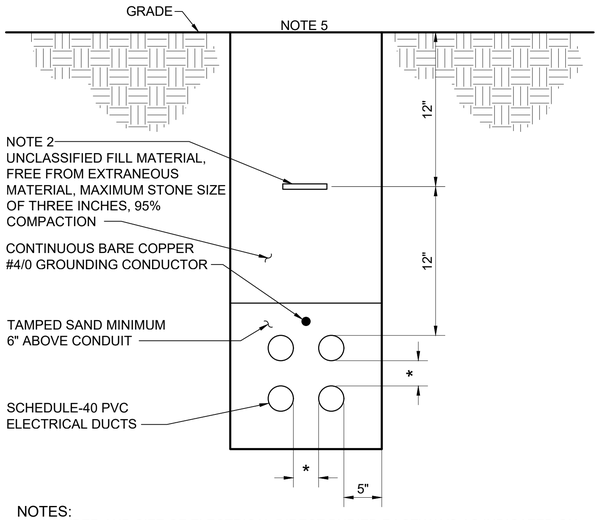
DESIGNED: K. CHANDLER
DRAWN: D. EHMANN
CHECKED: H. PACE
CHECKED: ----
APPROVED: S. BRENCHLEY
FILENAME E-004.dwg
BC PROJECT NUMBER 157520
CLIENT PROJECT NUMBER

ELECTRICAL

STANDARD DETAILS 2

DRAWING NUMBER
E-004

SHEET NUMBER 49 OF 59

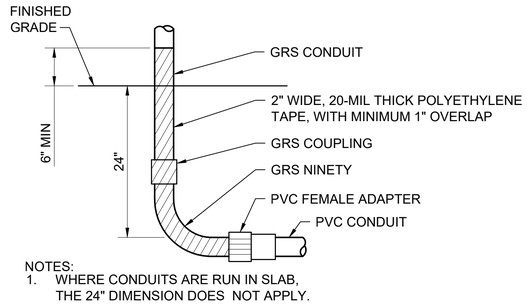


NOTES:
1. NUMBER AND SIZE OF ELECTRICAL DIRECT BURIED RACEWAYS AS INDICATED ON DRAWINGS OR SCHEDULES.
2. OSHA APPROVED 6" WIDE RED WARNING TAPE (IDEAL DU-601 OR EQUAL).
3. DIMENSIONS ARE MINIMUM.
4. BOND GROUNDING CONDUCTOR TO BUILDING GROUNDING ELECTRODES, POWER SOURCE AND LOAD ENCLOSURES.
5. REPLACE GRADING, PAVING AND CONCRETE TO MATCH EXISTING.

UNDERGROUND RACEWAYS DIRECT BURIED

DETAIL A / TYP

SCALE: NONE

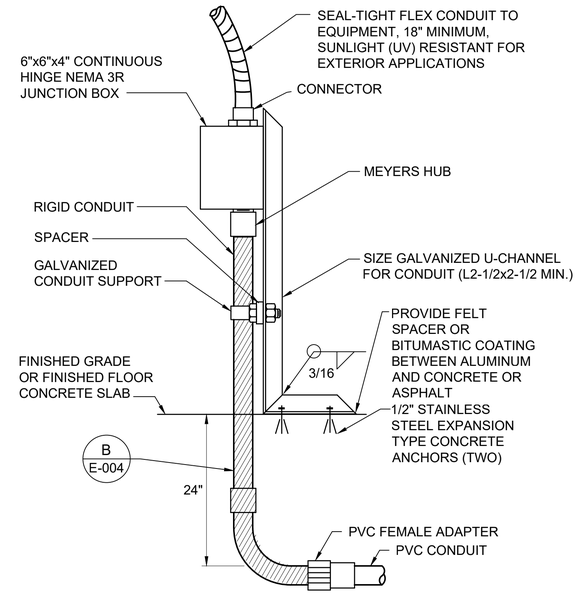


NOTES:
1. WHERE CONDUITS ARE RUN IN SLAB, THE 24" DIMENSION DOES NOT APPLY.

GRS STUB UP

DETAIL B / TYP

SCALE: NONE

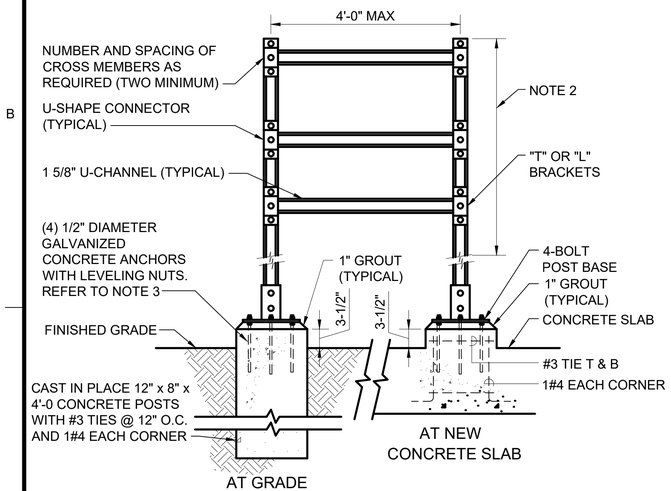


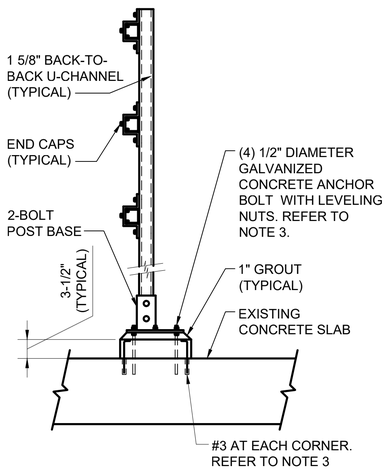
NOTES:
1. WHERE CONDUITS ARE RUN IN SLAB, THE 24" DIMENSION DOES NOT APPLY.

RIGID CONDUIT STUBUP & TRANSITION JB SUPPORT

DETAIL C / TYP

SCALE: NONE





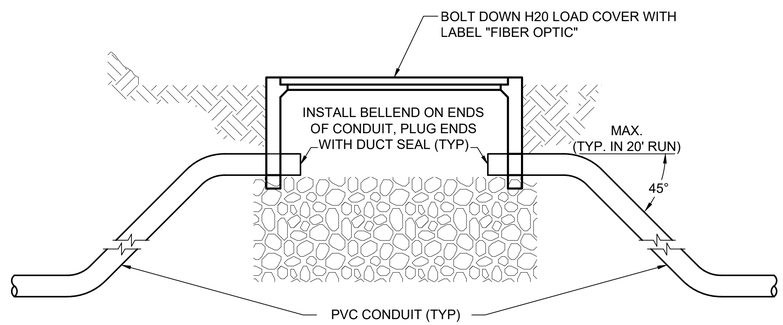
AT EXISTING CONCRETE SLAB

NOTES:
1. EQUIPMENT RACK SIZING:
   A. ONE ITEM GREATER THAN 150 SQUARE INCHES.
   B. TWO EQUIPMENT ITEMS GREATER THAN 130 SQUARE INCHES.
   C. THREE OR MORE EQUIPMENT ITEMS.
   D. PROVIDE GALVANIZED CHANNEL END-CAPS, AND FITTINGS
   E. PROVIDE 1/4" MINIMUM ALUMINUM PLATE FOR SMALL ITEMS
2. MOUNT INDICATORS OR EQUIPMENT OPERATING HANDLES FOUR FEET ABOVE FLOOR OR PLATFORM.
3. REFER TO STRUCTURAL DRAWINGS AND SPECIFICATION FOR ANCHORAGE MATERIAL AND METHOD REQUIREMENTS.
4. MATERIAL AND HARDWARE PER SPECIFICATION DIVISION 16.

EQUIPMENT RACK

DETAIL D / TYP

NONE



NOTES:
1. PROVIDE 2' OF PEA GRAVEL TO ALLOW WATER DRAINAGE.
2. PULLBOX SHALL BE 30"x48"x18".

FIBER OPTIC CABLE PULLBOX SECTION VIEW

DETAIL F / TYP

NONE

Brown AND Caldwell

SALT LAKE CITY, UT

Professional Engineer — CERTIFICATE NO. 36697 — KENNETH W. CHANDLER — Date Signed 3/24/2022 — ARIZONA, U.S.A.

CONSTRUCTION ISSUE

NAVAJO TRIBAL UTILITY AUTHORITY — UTILITIES FOR THE NAVAJO NATION

DILKON PASS PIPELINE AND PUMP STATION

REVISIONS

REV	DATE	DESCRIPTION

LINE IS 2 INCHES AT FULL SIZE

DESIGNED: K. CHANDLER
DRAWN: D. EHMANN
CHECKED: H. PACE
CHECKED: ----
APPROVED: S. BRENCHLEY
FILENAME E-005.dwg
BC PROJECT NUMBER 157520
CLIENT PROJECT NUMBER

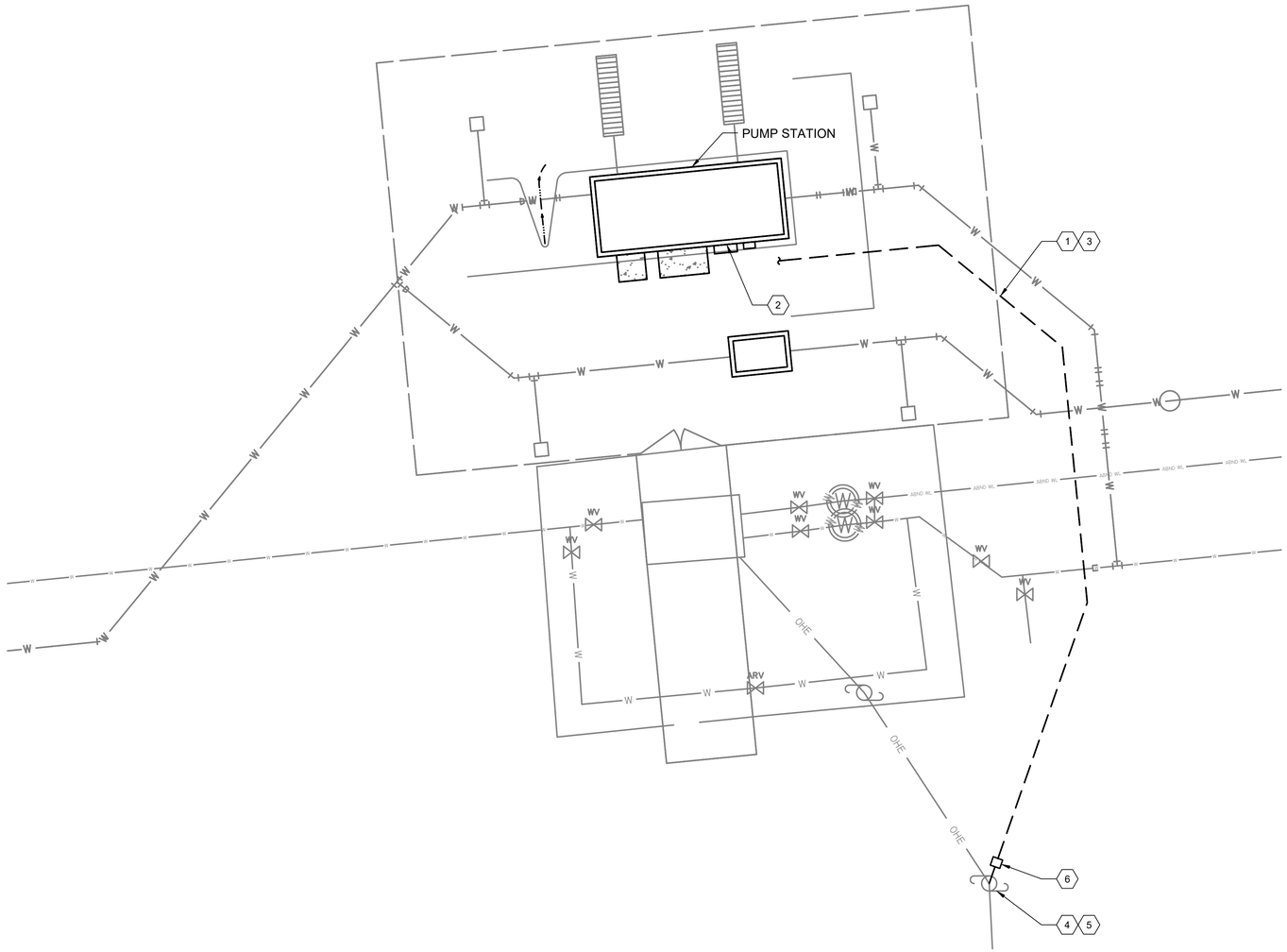
ELECTRICAL

STANDARD DETAILS 3

DRAWING NUMBER E-005

50 SHEET NUMBER OF 59

Path: C:\USERS\DEHMANN\BCPWD2344918 FILENAME: E-005.DWG PLOT DATE: 2/25/2022 1:51 PM CAD USER: DANIEL EHMANN



PLAN
SCALE: 3/32" = 1'-0"

PLAN NORTH

0 4 8 16
SCALE: 3/32" = 1'-0"

GENERAL NOTES

1. PROVIDE ELECTRICAL, INSTRUMENTATION, AND TELEMETRY SYSTEM.
2. POWER UTILITY: NAVAJO TRIBAL UTILITY AUTHORITY (NTUA), (928) 729-5721.

KEY NOTES

1. UNDERGROUND CIRCUITS PER DRAWING E-102, POWER UTILITY REQUIREMENTS TO PREVAIL.
2. PROVIDE SERVICE ENTRANCE SECTION METER, ARRESTOR ON OUTSIDE OF BUILDING.
3. FIBER OPTIC CIRCUIT SC-1.
4. EXISTING OVERHEAD SERVICE LINE AND POWER POLE.
5. PROVIDE SLACK ENCLOSURE AND 100 FOOT CABLE ON POLE. CARLON SLK12 OR EQUAL. TERMINATION OF FIBERS AT EXISTING POWERLINE/FO CABLE ROUTE BY NTUA, REFER TO DRAWING C-100.
6. FIBER OPTIC PULLBOX

Call at least two full working days before you begin excavation.
ARIZONA 811 Arizona Blue Stake, Inc.
Dial 8-1-1 or 1-800-STAKE-IT (782-5348)
In Maricopa County: (602) 263-1100

Brown AND Caldwell
SALT LAKE CITY, UT

Registered Professional Engineer (Civil)
CERTIFICATE NO.
36697
KENNETH W. CHANDLER
Date Signed 3/24/2022
ARIZONA, U.S.A.

CONSTRUCTION ISSUE

NAVAJO TRIBAL UTILITY AUTHORITY
NTUA
UTILITIES FOR THE NAVAJO NATION

DILKON PASS PIPELINE AND PUMP STATION

REVISIONS

REV	DATE	DESCRIPTION

LINE IS 2 INCHES AT FULL SIZE

DESIGNED:	K. CHANDLER
DRAWN:	D. EHMANN
CHECKED:	H. PACE
CHECKED:	----
APPROVED:	S. BRENCHLEY
FILENAME	E-100.dwg
BC PROJECT NUMBER	157520
CLIENT PROJECT NUMBER	

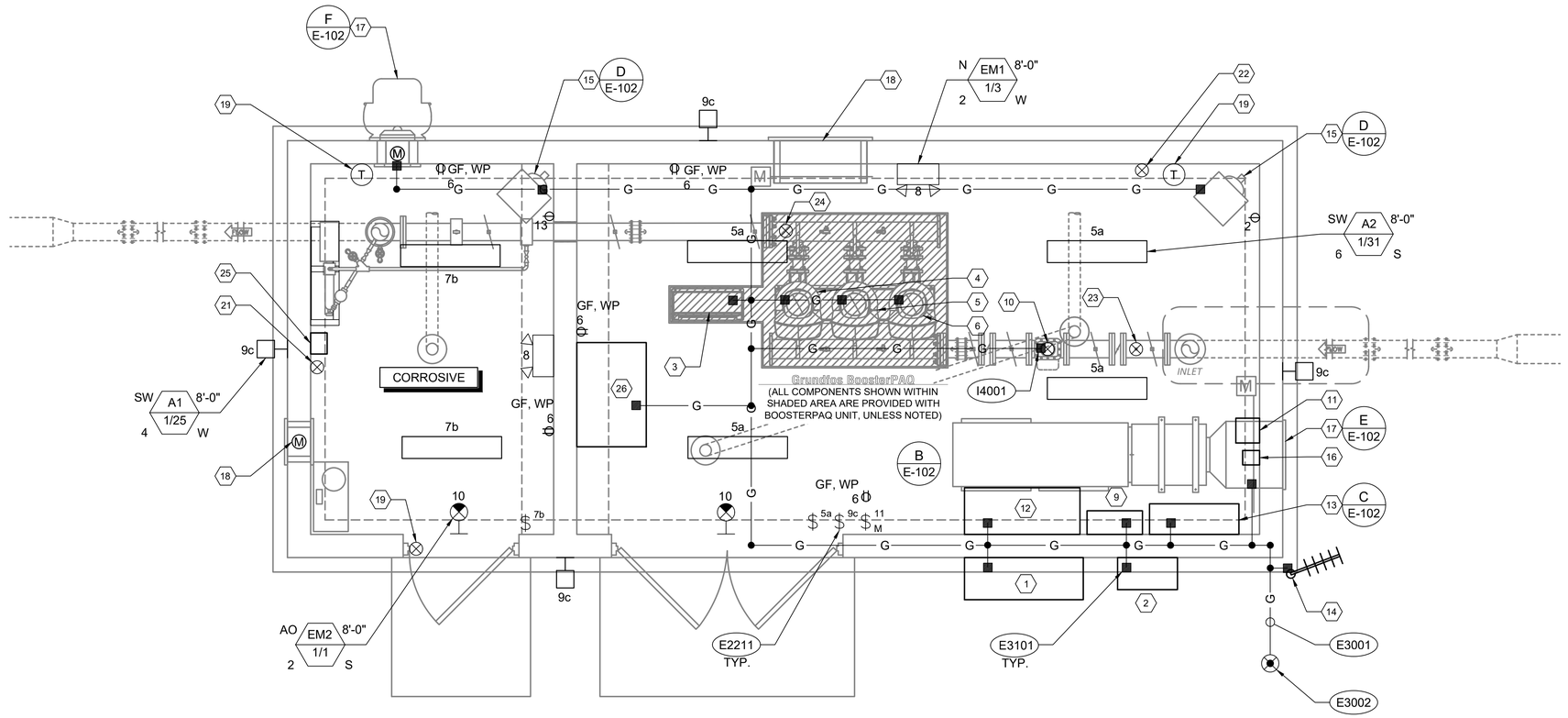
ELECTRICAL

DILKON PASS PUMP STATION SITE PLAN

DRAWING NUMBER
E-100

SHEET NUMBER 52 OF 59

PLAN NORTH



ELECTRICAL
PLAN
SCALE: 1/2" = 1'-0"

0 1 2 4
SCALE: 1/2" = 1'-0"

GENERAL NOTES

1. GENERAL REQUIREMENTS: SPECIFICATION 16000.
2. TESTING: SPECIFICATION 16030.
3. ARC FLASH HAZARD ANALYSIS AND LABELING: SPECIFICATION 16431.
4. CIRCUITS: DRAWING E-102.
5. SCHEDULE AND COORDINATE WORK TO MINIMIZE WATER SYSTEM CONTROL OUTAGES. REFER TO SPECIFICATION 01014 AND 17900.
6. SUBMIT ELECTRICAL EQUIPMENT LAYOUT PRIOR TO CONDUIT ROUGH-IN.

KEY NOTES

1. SERVICE ENTRANCE SECTION
2. MAIN DISCONNECT SWITCH
3. PUMP MANAGEMENT UNIT
4. PUMP 1
5. PUMP 2
6. PUMP 3
7. SUCTION LEVEL SWITCH
8. DISCHARGE PRESSURE SWITCH
9. LOAD CENTER DISCONNECT SWITCH
10. FLOW METER
11. FLOW INDICATOR
12. TELEMETRY PLC
13. TRANSFORMER AND LOAD CENTER
14. TELEMETRY ANTENNA ON 2" x 20'-0" PIPE, ANCHORED TO BUILDING. ALIGN TO DILKON PASS TANK SITE. PROVIDE ANTENNA CABLE IN CONDUIT. PROVIDE CGB FITTING AND EXPOSE LOOP OF CABLE FOR FINAL CONNECTION TO ANTENNA. MAKE PENETRATION TO BUILDING WATER TIGHT.
15. HEATER
16. FLOW AMI UNIT
17. FAN, DRAWING H-101
18. MOTORIZED DAMPER
19. DOOR SWITCH
20. THERMOSTAT
21. CHLORINE LEAK DETECTOR. LOCATE SENSOR BELOW AT HEIGHT PER MANUFACTURER. MOUNT BEACON ABOVE.
22. AIR TEMPERATURE SENSOR/SWITCH
23. SUCTION PRESSURE TRANSDUCER
24. DISCHARGE PRESSURE TRANSDUCER
25. CHLORINATOR CONTROLLER
26. SCADA NETWORK CABINET

DILKON PASS PUMP STATION

LOAD SUMMARY AT 480 VAC

LOAD DESCRIPTION	KVA	HP	480 VAC FLA
BOOSTER PUMP 1 VFD		25	34
BOOSTER PUMP 2 VFD		25	34
BOOSTER PUMP 3 VFD (STANDBY)		25	
TRANSFORMER FOR PANEL-A	15		31.3
SUBTOTAL:	15	75	99.3
PLUS 25%:			9
AMPERE TOTAL:			107.8

LUMINAIRE SCHEDULE

TYPE	DESCRIPTION	MODEL #
A1 1/25	LITHONIA WST LED - SURFACE MOUNT, RUGGED DIE-CAST ALUMINUM HOUSING, ACRYLIC LENS, HIGH-EFFECIENCY LED'S, ZERO UPLIGHT, NIGHTTIME FRIENDLY, IP65 RATED, CONSISTENT WITH LEED AND GREEN GLOBE CRITERIA FOR ELIMINATING WASTEFUL UPLIGHT, 120VAC	LITHONIA WST LED P2 3000 50K VF MVOLT DDBTXD
A2 1/31	LITHONIA FEM LED - SURFACE MOUNT, FIBERGLASS HOUSING, REPLACEABLE DIFFUSER LENS, HIGH-EFFICIENCY LED'S, 4000K TEMPERATURE STANDARD, CSA CERTIFIED TO UL AND C-UL STANDARDS, 120VAC	LITHONIA FEM L48 4000LM LPAFL MD MVOLT GZ10 40K 80CRI
EM1 1/3	LITHONIA ELM2 LED - SURFACE MOUNT, THERMOPLASTIC HOUSING, POLYCARBONATE LENS, LED SYSTEM, 90 MINUTE EMERGENCY LAMP CAPACITY, NICKEL CADMIUM BATTERY, MEETS UL 924, NFPA 101, NEC AND OSHA ILLUMINATION STANDARDS, 120VAC	LITHONIA ELM2 LED HO
EM2 1/1	LITHONIA LQM - SURFACE MOUNT, THERMOPLASTIC HOUSING, LED SYSTEM, 90 MINUTE EMERGENCY LAMP CAPACITY, NICKEL CADMIUM BATTERY, MEETS UL 924, NFPA 101, NEC AND OSHA ILLUMINATION STANDARDS, 120VAC	LITHONIA LQM S W 3 R 120/277 EL N

Brown AND Caldwell
SALT LAKE CITY, UT

Licensed Professional Engineer (Electrical)
CERTIFICATE NO.
36697
KENNETH W. CHANDLER
Date Signed 3/4/2022
ARIZONA, U.S.A.

CONSTRUCTION ISSUE

NAVAJO TRIBAL UTILITY AUTHORITY
NTUA
UTILITIES FOR THE NAVAJO NATION

DILKON PASS PIPELINE AND PUMP STATION

REVISIONS

REV	DATE	DESCRIPTION

LINE IS 2 INCHES AT FULL SIZE

DESIGNED: K. CHANDLER
DRAWN: D. EHMANN
CHECKED: H. PACE
CHECKED: ----
APPROVED: S. BRENCHLEY
FILENAME E-101.dwg
BC PROJECT NUMBER 157520
CLIENT PROJECT NUMBER

ELECTRICAL

DILKON PASS PUMP STATION PLAN

DRAWING NUMBER
E-101

SHEET NUMBER 52 OF 59

Path: C:\USERS\DEHMANN\BCPWID2344918 FILENAME: E-101.DWG PLOT DATE: 3/3/2022 2:30 PM CAD USER: DANIEL EHMANN

SINGLE PHASE PANEL: LOAD CENTER (LC)

VOLTAGE, PHASE, & WIRE:	120 / 240	VAC, 1 PHASE, 3 WIRE	LOCATION:		CEDAR RIDGE PUMP STATION NO. 1
BUS SIZE:	100	AMPERE	ENCLOSURE:		NEMA-3R
MAIN SIZE:	70	AMPERE	MOUNTING:		WALL
MAIN TYPE:		CIRCUIT BREAKER	BUS BRACING:		22 K AIC
BREAKER TYPE:		PLUG-ON	FED FROM:		SES OUTDOORS

CIRCUIT TITLE / LOAD DESCRIPTION	AWG WIRE SIZE	RACE-WAY SIZE	BREAKER CKT NO.	BREAKER AMP	BREAKER POLE	LOAD (VA) PHASE A	LOAD (VA) PHASE B	LOAD (VA) PHASE B	LOAD (VA) PHASE A	BREAKER POLE	BREAKER AMP	BREAKER CKT NO.	AWG WIRE SIZE	RACE-WAY SIZE	CIRCUIT TITLE / LOAD DESCRIPTION
TELEMETRY PLC CONTROL PANEL	2-12, 12G	1/2	1	15	1	180			1800	2	30	2	2-10, 10G	3/4	PUMP ROOM HEATER
FLOW METER INDICATOR	2-12, 12G	1/2	3	15	1		180	1800				4			
PUMP ROOM LIGHTING	2-12, 12G	1/2	5	15	1	155			720	1	15	6	2-12, 12G	1/2	PUMP STATION RECEPTACLES
CHLORINE ROOM LIGHTING	2-12, 12G	1/2	7	15	1		78	7.5		1	15	8	2-12, 12G	1/2	PUMP STATION EMERGENCY LIGHTING
PUMP STATION EXTERIOR LIGHTING	2-12, 12G	1/2	9	15	1	125			3	1	15	10	2-12, 12G	1/2	PUMP STATION EXIT LIGHTING
EXHAUST FAN	2-12, 12G	1/2	11	15	1		900	10		1	15	12	2-12, 12G	1/2	FLOW INDICATOR
CHLORINE ROOM HEATER	2-10, 10G	3/4	13	30	2	1800			10	1	15	14	2-12, 12G	1/2	FLOW AMI UNIT
			15				1800			2	-	16	MFR.		SURGE PROTECTOR
PUMP ROOM EXHAUST FAN/DAMPER	2-12, 12G	1/2	17	15	1	750						18			
CHLORINE ROOM EXHAUST FAN/DAMPER	2-12, 12G	1/2	19	15	1		750	180		1	15	20	2-12, 12G	1/2	CHLORINE ROOM CHLORINE LEAK DETECTOR
SCADA NETWORK CABINET	2-12, 12G	1/2	21	15	1	360			180	1	15	22	2-12, 12G	1/2	CHLORINATOR CONTROLLER
SPACE			23									24			SPACE
SPACE			25									26			SPACE
SPACE			27									28			SPACE
SPACE			29									30			SPACE
SPACE			31									32			SPACE
SPACE			33									34			SPACE
SPACE			35									36			SPACE
SPACE			37									38			SPACE
SPACE			39									40			SPACE
SPACE			41									42			SPACE
	COLUMN	TOTALS:				3370	3708	1998	2713						

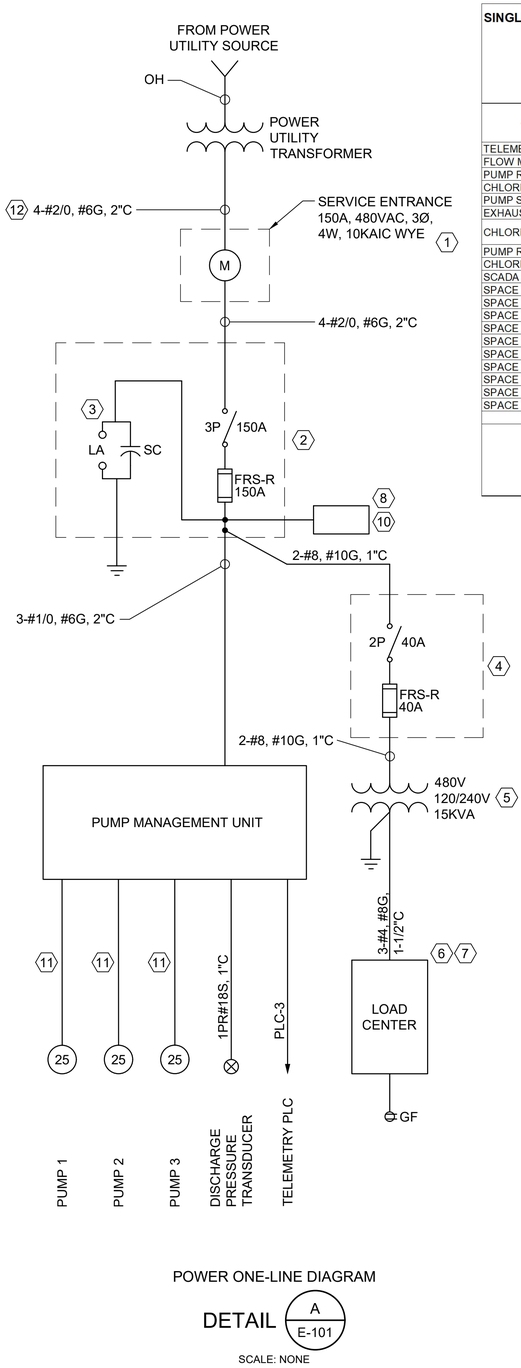
PHASE-A LOAD (VA): 6083
PHASE-B LOAD (VA): 5706

TOTAL LOAD (VA)= 11789 I (amp) 49.1

PANEL SCHEDULE

DETAIL C / E-101

SCALE: NONE



POWER ONE-LINE DIAGRAM

DETAIL A / E-101

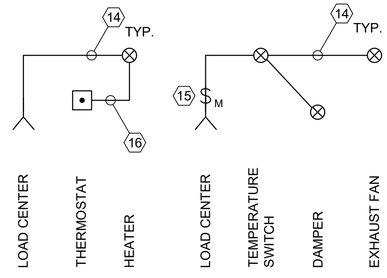
SCALE: NONE

F / E-102

CONTROL ONE-LINE DIAGRAM

DETAIL B / E-101

SCALE: NONE



HEATER ONE-LINE DIAGRAM

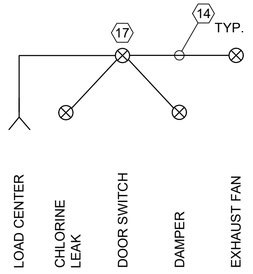
DETAIL D / E-101

SCALE: NONE

PUMP ROOM FAN ONE-LINE DIAGRAM

DETAIL E / E-101

SCALE: NONE



CHLORINE ROOM FAN ONE-LINE DIAGRAM

DETAIL F / E-101, E-102

SCALE: NONE

GENERAL NOTES

1. POWER UTILITY: NAVAJO TRIBAL UTILITY AUTHORITY.
2. GENERAL REQUIREMENTS: SPECIFICATION 16000.
3. TESTING: SPECIFICATION 16030.
4. ARC FLASH HAZARD ANALYSIS AND LABELING: SPECIFICATION 16431.
5. SCHEDULE AND COORDINATE WORK TO MINIMIZE WATER SYSTEM CONTROL OUTAGES. REFER TO SPECIFICATION 01014 AND 17900.
6. LOAD SUMMARY: DRAWING E-101.

KEY NOTES

1. SERVICE ENTRANCE METER SOCKET, NEMA 3R, EUSERC, TEST BLOCKS, SQUARE D.
2. MAIN DISCONNECT SWITCH, HEAVY DUTY, NEMA 3R, CLASS R FUSE REJECTION KIT, SQUARE D.
3. LIGHTNING ARRESTOR, DELTA LA603.
4. LOAD CENTER DISCONNECT SWITCH, HEAVY DUTY, NEMA 3R SQUARE D MODEL QO.
5. TRANSFORMER, TOTALLY ENCLOSED/ENCAPSULATED, 115 DEGREES C RISE, ACME T-2-53517-3S.
6. LOAD CENTER, WITH GROUND BAR, NEMA 3R, SQUARE D QOI16M100RB.
7. SURGE PROTECTIVE DEVICE, BUS CONNECTED, UL 1449 TYPE 2, 22.5KA SURGE, 1 PHASE 3-WIRE, SQUARE D QO2175SB.
8. SURGE PROTECTIVE DEVICE, UL 1449 TYPE 1, 40KA SURGE, 3 PHASE 4-WIRE, SQUARE D SDSA3650.
9. PROVIDE PER NTUA - TECHNICAL PROVISIONS 4.0 FOR MOTOR CONTROL CENTER AND TANK CONTROL PANEL - PLC CONTROL PANEL, INPUT/OUTPUT WIRING FOR GRUNDFOS BOOSTER PAQ.
10. SPD. WIRE SIZE PER MANUFACTURER, 1-1/4"C
11. CABLE PER MANUFACTURER, 1"C
12. POWER UTILITY REQUIREMENTS FOR CONDUIT AND BURIAL PREVAIL IF DIFFERENT THAN SPECIFIED.
13. 1PR #18S, 1/2" C
14. FAN CIRCUITS, 2-#12, #12G, 1/2"C
15. MANUAL STARTER: SPECIFICATION 16000
16. CABLE PER MANUFACTURER, 3/4"C
17. DOOR SWITCH, ROCKER/ROLLER, NEMA 4X, 20 AMP, HONEYWELL, ALLEN-BRADLEY, OR EQUAL.
18. 2-#14, #14G, 1/2"C
19. PROVIDE PER SPECIFICATION 17110.

Brown AND Caldwell

SALT LAKE CITY, UT

Registered Professional Engineer (Civil) CERTIFICATE NO. 36697 KENNETH W. CHANDLER Date Signed 3/24/2022 ARIZONA, U.S.A.

CONSTRUCTION ISSUE

NAVAJO TRIBAL UTILITY AUTHORITY NTUA UTILITIES FOR THE NAVAJO NATION

DILKON PASS PIPELINE AND PUMP STATION

REVISIONS

REV	DATE	DESCRIPTION

LINE IS 2 INCHES AT FULL SIZE

DESIGNED: K. CHANDLER
DRAWN: D. EHMANN
CHECKED: H. PACE
CHECKED: ----
APPROVED: S. BRENCHLEY

FILENAME
E-102.dwg

BC PROJECT NUMBER
157520

CLIENT PROJECT NUMBER

ELECTRICAL

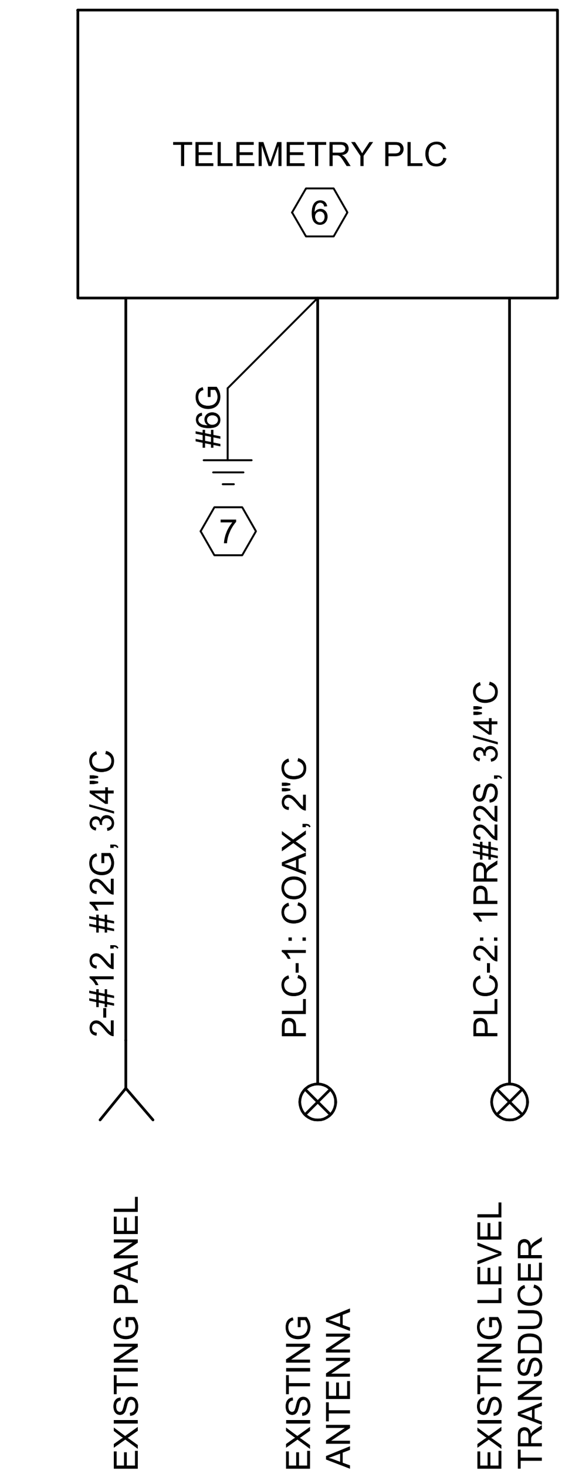
DILKON PASS PUMP STATION ONE-LINE DIAGRAM

DRAWING NUMBER
E-102

SHEET NUMBER 53 OF 59

DILKON PASS TANK
PLAN
SCALE: 1" = 100'-0"

0 50 100 200
SCALE: 1" = 100'-0"
PLAN NORTH



CONTROL ONE-LINE DIAGRAM
DETAIL A / -
SCALE: NONE

GENERAL NOTES

1. REPLACE TELEMETRY PLC.
2. GENERAL REQUIREMENTS: SPECIFICATION 16000.
3. TESTING: SPECIFICATION 16030.
4. SCHEDULE AND COORDINATE WORK TO MINIMIZE WATER SYSTEM CONTROL OUTAGES. REFER TO SPECIFICATION 01014 AND 17900.

KEY NOTES

1. EXISTING PANEL
2. EXISTING OVERHEAD SERVICE LINE AND POWER POLE.
3. EXISTING TANK LEVEL (PRESSURE) TRANSDUCER IN VAULT.
4. REPLACE TELEMETRY PLC
5. RETAIN EXISTING ANTENNA AND TRANSMISSION LINE
6. PROVIDE PER NTUA - TECHNICAL PROVISIONS 4.0 FOR MOTOR CONTROL CENTER AND TANK CONTROL PANEL - AC TANK PANEL.
7. PROVIDE 10 FOOT COPPER GROUND ROD DRIVEN IN EARTH. PROVIDE #6 BOND TO EXISTING GROUND SYSTEM.

Brown AND Caldwell
SALT LAKE CITY, UT

Registered Professional Engineer CERTIFICATE NO. 36697 KENNETH W. CHANDLER ARIZONA, U.S.A.

CONSTRUCTION ISSUE

NAVAJO TRIBAL UTILITY AUTHORITY — UTILITIES FOR THE NAVAJO NATION

DILKON PASS PIPELINE AND PUMP STATION

REVISIONS

REV	DATE	DESCRIPTION

LINE IS 2 INCHES AT FULL SIZE

DESIGNED: K. CHANDLER
DRAWN: D. EHMANN
CHECKED: H. PACE
CHECKED: ----
APPROVED: S. BRENCHLEY
FILENAME E-110.dwg
BC PROJECT NUMBER 157520
CLIENT PROJECT NUMBER

ELECTRICAL

DILKON PASS STORAGE TANK SITE PLAN

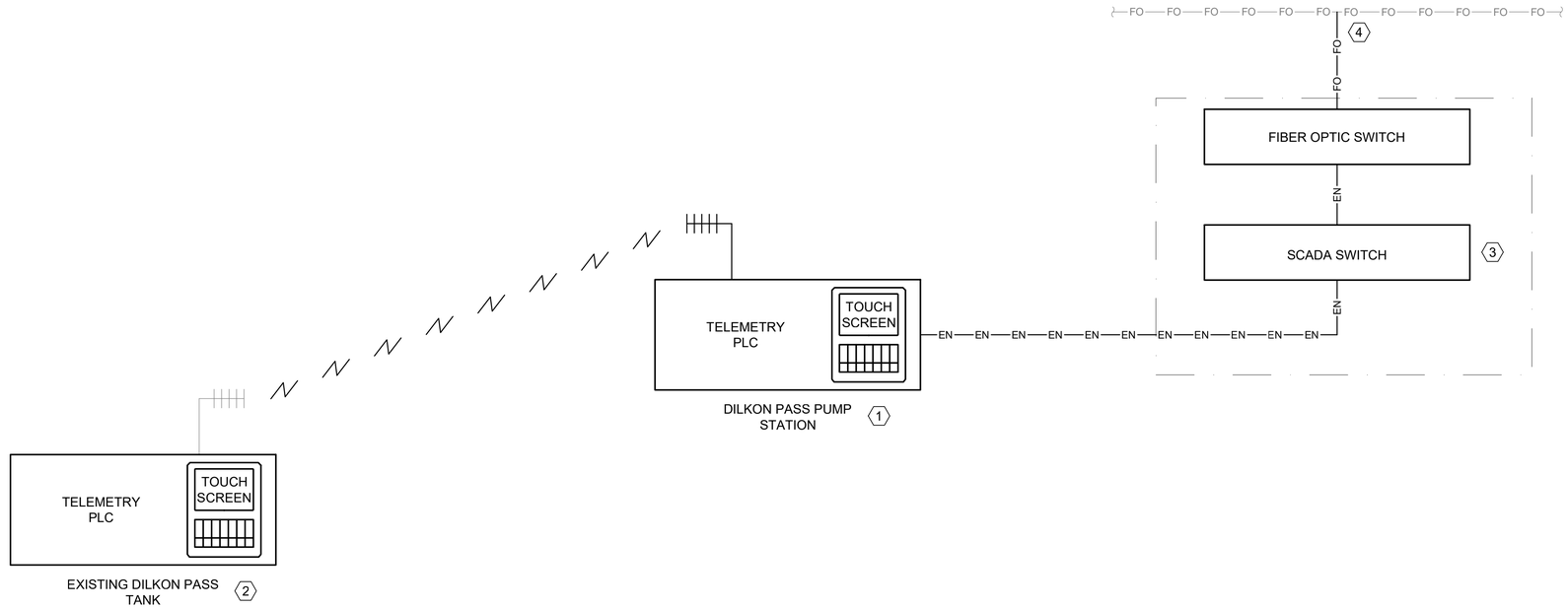
DRAWING NUMBER E-110

GENERAL NOTES

1. LOWER GREASEWOOD TANK PROVIDES WATER FOR THE WOOD CHOP AND DILKON WATER SYSTEM.
2. PROVIDE REPLACEMENT DILKON PASS PUMP STATION AT LOCATION SOUTH OF THE EXISTING. BOOSTER FILLS DILKON PASS TANK.
3. PROVIDE REPLACEMENT PLC FOR THE DILKON PASS TANK.
4. SCHEDULE AND COORDINATE WORK TO MINIMIZE WATER SYSTEM CONTROL OUTAGES. REFER TO SPECIFICATION 01014 AND 17900.

KEY NOTES

1. REPLACE PUMP STATION AND TELEMETRY.
2. REPLACE TELEMETRY PLC.
3. SCADA SWITCH AND FIBER OPTIC SWITCH.
4. FIBER OPTIC CABLE AND CONNECTION TO EXISTING FIBER OPTIC LOOP BY NTUA.



Brown AND Caldwell

SALT LAKE CITY, UT

Registered Professional Engineer
CERTIFICATE NO.
35940
KENNETH W. CHANDLER
Date Signed 2/24/2022
ARIZONA, U.S.A.

CONSTRUCTION ISSUE

NAVAJO TRIBAL UTILITY AUTHORITY
NTUA
UTILITIES FOR THE NAVAJO NATION

DILKON PASS PIPELINE AND PUMP STATION

REVISIONS

REV	DATE	DESCRIPTION

LINE IS 2 INCHES AT FULL SIZE

DESIGNED:	K. CHANDLER
DRAWN:	D. EHMANN
CHECKED:	H. PACE
CHECKED:	----
APPROVED:	S. BRENCHLEY

FILENAME
I-001.dwg

BC PROJECT NUMBER
157520

CLIENT PROJECT NUMBER

INSTRUMENTATION

DILKON PASS COMMUNICATIONS BLOCK DIAGRAM

DRAWING NUMBER
I-001

SHEET NUMBER 55 OF 59

Path: C:\USERS\DEHMANN\BCPW\D2344920 FILENAME: I-001.DWG PLOT DATE: 2/25/2022 1:26 PM CAD USER: DANIEL EHMANN

MECHANICAL LEGEND

SYMBOL	ABR.	DESCRIPTION
		GENERAL TERMINOLOGY
A2		DETAIL NUMBER DESIGNATION CORRESPONDING WITH GRID LOCATION
MA / 1		MECHANICAL EQUIPMENT DESIGNATION EQUIPMENT ITEM DESIGNATION
D-1 / CFM		REGISTER, GRILL OR DIFFUSER DESIGNATION WITH BALANCING CFM LISTED BELOW
R-1		GRILLE, OR LOUVER DESIGNATION WHERE BALANCING NOT REQUIRE
		REVISION DESIGNATOR AND NUMBER
1		KEY NOTE DESIGNATOR AND NUMBER
	POC	POINT OF CONNECTION
	POR	POINT OF REMOVAL
GC		GENERAL CONTRACTOR
MC		MECHANICAL CONTRACTOR
ATC		CONTROL CONTRACTOR
EC		ELECTRICAL CONTRACTOR
FPC		FIRE PROTECTION CONTROL
NIC		NOT IN CONTRACT
NTS		NOT TO SCALE
C		COMMON
NC		NORMALLY CLOSED
NO		NORMALLY OPEN

SYMBOL	ABR.	DESCRIPTION
		AIR SIDE
		EXISTING AIR DUCT TO BE REMOVED
		EXISTING AIR DUCT TO REMAIN
		NEW AIR DUCT
		NEW SPIRAL DUCT
		NEW MEDIUM PRESSURE DUCT
		BURIED OR UNDER FLOOR DUCT
		FLEXIBLE AIR DUCT
		LINED DUCT
		VANED ELBOW
		RADIUS ELBOW
		FLEXIBLE AIR DUCT CONNECTION
VD		VOLUME DAMPER
		SUPPLY AIR DIFFUSER
		RETURN AIR, FRESH AIR, AND TRANSFER AIR
		CEILING MOUNTED EXHAUST FAN OR EXHAUST GRILLE
		RETURN OR OUTSIDE AIR DUCT UP
		SUPPLY DUCT UP
		EXHAUST AIR INTAKE UP
		RETURN OR OUTSIDE AIR DUCT DOWN
		SUPPLY DUCT DOWN
		EXHAUST DUCT DOWN
		ROUND DUCT UP
		ROUND DUCT DOWN
	AP	ACCESS PANEL
		EXISTING EQUIPMENT TO BE REMOVED
		EXISTING EQUIPMENT TO REMAIN
		NEW EQUIPMENT

SYMBOL	ABR.	DESCRIPTION
		WET SIDE
		PUMP
		REGULATOR
		UNION
		BUTTERFLY VALVE
		GATE VALVE
	CBV	CIRCUIT BALANCING VALVE
	BV	BALL VALVE
		PRESSURE GAUGE AND GAUGE COCK - WATER
		THERMOMETER AND THERMOWELL
		DIRECTION OF FLOW
		ELBOW UP
		ELBOW DOWN
		TEE UP
		TEE DOWN
		EXISTING PIPING TO BE REMOVED
		EXISTING PIPING TO REMAIN
		NEW PIPING
		PIPE CAP OR PLUG
		FLEXIBLE CONNECTION
HWS		HEATING WATER SUPPLY
HWR		HEATING WATER RETURN
CHWS		CHILLED WATER SUPPLY
CHWR		CHILLED WATER RETURN

MECHANICAL GENERAL NOTES:

	GENERAL
GM-1	THE MECHANICAL INSTALLATION SHALL CONFORM TO THE 2018 EDITION OF THE IMC WITH UTAH ANNOTATIONS AND LOCAL AUTHORITY REQUIREMENTS.
GM-2	MECHANICAL INFORMATION IS NOT LIMITED TO THE MECHANICAL DRAWINGS. CONTRACTOR SHALL BE RESPONSIBLE FOR INFORMATION ON ALL OTHER CONSTRUCTION DOCUMENTS INCLUDING DRAWINGS BY OTHER DISCIPLINES AND SPECIFICATIONS.
GM-3	A - EACH DRAWING SHEET HAS BEEN PREPARED TO SUPPLEMENT EACH OTHER AND THEY SHALL BE INTERPRETED AS AN INTEGRAL UNIT WITH ITEMS SHOWN AND NOTED ON ONE AND NOT THE OTHER BEING FURNISHED AND INSTALLED AS THOUGH SHOWN AND CALLED OUT IN ALL PLACES. B - THE CONTRACTOR WILL BE HELD RESPONSIBLE FOR THE INSTALLATION OF THE SYSTEMS ACCORDING TO THE TRUE INTENT AND MEANING OF THE CONTRACT DOCUMENTS. C - THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT WITH PROPER SERVICE ACCESS AND CLEARANCES ACCORDING TO MANUFACTURERS RECOMMENDATIONS. THE CONTRACTOR SHALL REVIEW SUPPLIERS BID PACKAGES FOR COMPLETENESS AND COMPLIANCE TO THE SPECIFICATIONS, SCHEDULES, AND DESIGN INTENT (ALL EQUIPMENT AND METHODS). THE CONTRACTOR SHALL REMOVE AND REINSTALL CORRECTLY AT HIS OWN EXPENSE ANY EQUIPMENT NOT IN COMPLIANCE. D - THE CONTRACTOR SHALL CONSULT MANUFACTURERS INSTALLATION INSTRUCTIONS FOR SIZES, METHODS, ACCESSORIES, AND CLEARANCES IN SPACE AVAILABLE PRIOR TO BIDDING PROJECT. E - ANYTHING NOT CLEAR OR IN CONFLICT WILL BE EXPLAINED BY MAKING APPLICATION TO THE ENGINEER IN WRITING.
GM-4	ANY AND ALL ALTERATIONS TO THE SYSTEM SHOWN SHALL BE THE RESPONSIBILITY OF THIS CONTRACTOR. ARCHITECT SHALL BE NOTIFIED IN WRITING PRIOR TO CHANGES.
GM-5	CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS AND LOCATIONS.
GM-6	THE WORKING DRAWINGS ARE DIAGRAMMATIC. THEY DO NOT SHOW EVERY OFFSET, BEND, OR ELBOW NECESSARY FOR THE COMPLETE INSTALLATION IN THE SPACE PROVIDED. ALL LOCATIONS FOR MECHANICAL EQUIPMENT SHALL BE FIELD VERIFIED AND COORDINATED WITH ALL DRAWINGS. THE CONTRACTOR SHALL PROVIDE OR COORDINATE WITH THE GENERAL CONTRACTOR PROVISIONS FOR BLOCK OUTS OR CORE DRILLS THROUGH STRUCTURE. CHANGES REQUIRED IN WORK SPECIFIED IN DIV 22 AND 23 CAUSED BY NEGLECT TO SECURE APPROVAL SHALL BE MADE AT NO COST TO THE OWNER.
GM-7	THE INSTRUCTION TO "PROVIDE" ALSO INCLUDES INSTALLATION.
GM-8	THE CONTRACTOR SHALL ASSUME ALL RESPONSIBILITY IN HANDLING AND DISPOSING OF REFRIGERANTS, OILS, ETC. ALL SUCH MATERIALS SHALL BE HANDLED, DISPOSED, AND USED ON ACCORDANCE WITH ALL LOCAL, STATE, AND FEDERAL LAWS.
GM-9	THE MECHANICAL CONTRACTOR SHALL VERIFY MOTOR VOLTAGES WITH THE ELECTRICAL DRAWING PRIOR TO ORDERING MOTORIZED EQUIPMENT AND CONTROLS.
GM-10	SUPPLIERS SHALL REVIEW ALL DRAWINGS PRIOR TO SUBMITTING PRICES TO THE CONTRACTOR. ALL QUESTIONS AND DISCREPANCIES SHALL BE BROUGHT TO THE ENGINEERS ATTENTION PRIOR TO BIDDING.
GM-11	CONTRACTOR SHALL THOROUGHLY REVIEW AND SIGN SUBMITTALS FOR COMPLETENESS AND COMPLIANCE TO THE SPECIFICATIONS PRIOR TO ENGINEERS REVIEW. SUPPLIERS SHALL HIGHLIGHT OR MARK ALL INFORMATION REQUIRED TO SHOW COMPLIANCE TO THE SPECIFICATIONS. ALL REQUESTED EXCEPTIONS TO THE DRAWINGS, OR SCHEDULES SHALL BE CLEARLY NOTED AND EXPLAINED. SUBMITTAL REVIEW AND ACCEPTANCE IS FOR DESIGN CONCEPT ONLY, AND DOES NOT AT ANY TIME RELIEVE THE CONTRACTOR OF RESPONSIBILITY TO MEET SPECIFICATIONS, CAPACITIES, OR DESIGN INTENT.
GM-12	INSTALLATION AND SELECTION OF MATERIALS AND EQUIPMENT SHALL ADHERE TO THE REQUIREMENTS OF ASHRAE/IEES 90.1-2016 ENERGY EFFICIENT DESIGN OF NEW BUILDINGS EXCEPT LOW RISE AND ENFORCED BY THE LAWS OF THE STATE OF UTAH AND THE LOCAL AUTHORITY HAVING JURISDICTION.
GM-13	PROVIDE OPERATION AND MAINTENANCE (O&M) MANUALS TO THE OWNER. SUBMIT TO ENGINEER ELECTRONICALLY FOR REVIEW AND COMPLETENESS. THIS SHALL INCLUDE MINIMUM 1 YEAR LABOR WARRANTY, ORGANIZED APPROVED SUBMITTALS, O&M DOCUMENTS FOR ALL EQUIPMENT, CONTROLS DIAGRAMS, SEQUENCE OF OPERATIONS, TAB REPORT, ETC. DOCUMENT SHALL BE AN ORGANIZED AND BOOKMARKED PDF.
GM-14	CONTRACTOR SHALL KEEP AN UP TO DATE SET OF MECHANICAL AND PLUMBING DRAWINGS IN HIS CUSTODY SHOWING ALL CHANGES IN RED, CLEARLY DEFINED AND NEATLY DRAFTED BY HIM. AT THE END OF CONSTRUCTION, HE SHALL TURN THESE DRAWINGS OVER TO THE ENGINEER. RECORD DRAWINGS MUST BE COMPLETED AND SUBMITTED PRIOR TO FINAL SITE OBSERVATION.
GM-15	PROVIDE TAGS AND LABELS ON NEW PIPING, DUCTWORK, AND EQUIPMENT. EQUIPMENT TAGS SHALL BE METAL WITH DATA ENGRAVED OR STAMPED FOR PERMANENT ATTACHED ON EQUIPMENT AND SHALL INCLUDE MANUFACTURER, PRODUCT NAME, MODEL NUMBER, SERIAL NUMBER, CAPACITY, OPERATING AND POWER CHARACTERISTICS, AND ESSENTIAL DATA. THESE SHALL BE LOCATED IN AN ACCESSIBLE AND VISIBLE LOCATION. PIPING MARKERS SHALL BE COLOR CODED WITH LETTERING INDICATING SERVICE AND FLOW DIRECTION. DUCT LABELS SHALL BE LOCETED WHERE DUCTS ENTER INTO CONCEALED SPACES AND A MAXIMUM INTERVAL OF 50 FEET IN EXPOSED OR ACCESSIBLE CEILINGS. THESE SHALL INDICATE SERVICE AND FLOW DIRECTION.
GM-16	SEE STRUCTURAL PLANS FOR OFFICIAL SEISMIC AND WIND CLASSIFICATIONS. PROVIDE SEISMIC CALCULATIONS AND DESIGN AS DEFERRED SUBMITTAL FOR ALL COMPONENTS REQUIRED BY IBC BY LICENSED SEISMIC ENGINEER. BUILDING IMPORTANCE FACTOR = 1.0. COMPONENT IMPORTANCE FACTOR SHALL BE THE SAME AS BUILDING UNLESS SPECIFIED DIFFERENTLY IN THE IBC.
	AIR SIDE
GA-1	MECHANICAL CONTRACTOR SHALL PROVIDE AND INSTALL SMOKE AND FIRE DAMPERS AS REQUIRED BY LOCAL CODES AND AUTHORITIES.
GA-2	SHEET METAL DUCT SIZES SHOWN ON DRAWINGS ARE FREE AREA DIMENSIONS.
GA-3	PROVIDE AND INSTALL BALANCING DAMPERS IN ALL SUPPLY AND EXHAUST AIR BRANCH DUCTS. BALANCE TO CFM SHOWN ON PLAN. TESTING AND BALANCING SHALL BE PERFORMED BY AABC OR NEBB CERTIFIED TAB CONTRACTOR. BALANCE REPORT SHALL BE ISSUED TO THE ENGINEER OF RECORD FOR REVIEW.
GA-4	SEE ARCHITECTURAL REFLECTED CEILING PLAN FOR EXACT LOCATION OF DIFFUSERS AND GRILLES.
GA-5	PROVIDE TURNING VANES IN ALL ELBOWS OF RECTANGULAR DUCT.
GA-6	C.F.M. LISTED IS ACTUAL AIR.
GA-7	ALL DUCTWORK SHALL BE GALVANIZED STEEL FABRICATED TO SMACNA STANDARDS FOR THE VELOCITY, PRESSURE, AND GEOMETRY INVOLVED. DUCT JOINTS SHALL BE SEALED USING HARD CAST TAPE. TYPE AND APPLICATION TECHNIQUES SHALL BE AS RECOMMENDED BY THE MANUFACTURER FOR THE INTENDED USE AND LOCATION.
GA-8	DUCT LINER SHALL BE ATTACHED TO INSIDE OF DUCTWORK WITH ADHESIVE COATING BETWEEN THE DUCT AND LINER AND FURTHER SECURED BY PINS MECHANICALLY FASTENED TO DUCT. PINS ADHESIVELY ATTACHED ARE NOT ACCEPTABLE ALL EDGES OF LINER SHALL BE THOROUGHLY COATED WITH ADHESIVE AND TIGHTLY BUTTED. LINER SHALL BE FIBERGLASS WITH BLACK CLOTH FINISH ON SMACNA STANDARDS AND ALL REQUIREMENTS OF THE MANUFACTURER. LINER AND ADHESIVE SHALL MEET ALL REQUIREMENTS OF FEDERAL, STATE, AND LOCAL CODES.
GA-9	DUCTWORK ROUTED OUTSIDE OF BUILDING SHALL BE INSULATED AS REQUIRED BY ASHRAE/IEES 90.1-2016. INSULATION SHALL BE MADE UP OF DUCT LINER, EXTERNAL DUCT WRAP WITH A WEATHERPROOF COVER OR A COMBINATION THERE OF AS NEEDED TO MEET REQUIREMENTS. INSULATION SYSTEM SHALL MEET UBC, IMC, ASTM, UL, AND NFPA STANDARDS AND REQUIREMENTS.

Brown AND Caldwell

SALT LAKE CITY, UT

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PROFESSIONAL ENGINEER
03.02.22
WINWARD M. PACKER
No. 69496
STATE OF ARIZONA

CONSTRUCTION ISSUE

NAVAJO TRIBAL UTILITY AUTHORITY
UTILITIES FOR THE NAVAJO NATION

DILKON PASS PIPELINE AND PUMP STATION

REVISIONS

REV	DATE	DESCRIPTION

LINE IS 2 INCHES AT FULL SIZE

DESIGNED: E. RIGBY
DRAWN: E. RIGBY
CHECKED: J. LARSEN
CHECKED:------
APPROVED: W. PACKER

FILENAME
H-001.dwg

BC PROJECT NUMBER
157520

CLIENT PROJECT NUMBER
00357.21

HVAC

HVAC LEGEND AND GENERAL NOTES

DRAWING NUMBER
H-001

SHEET NUMBER 56 OF 59

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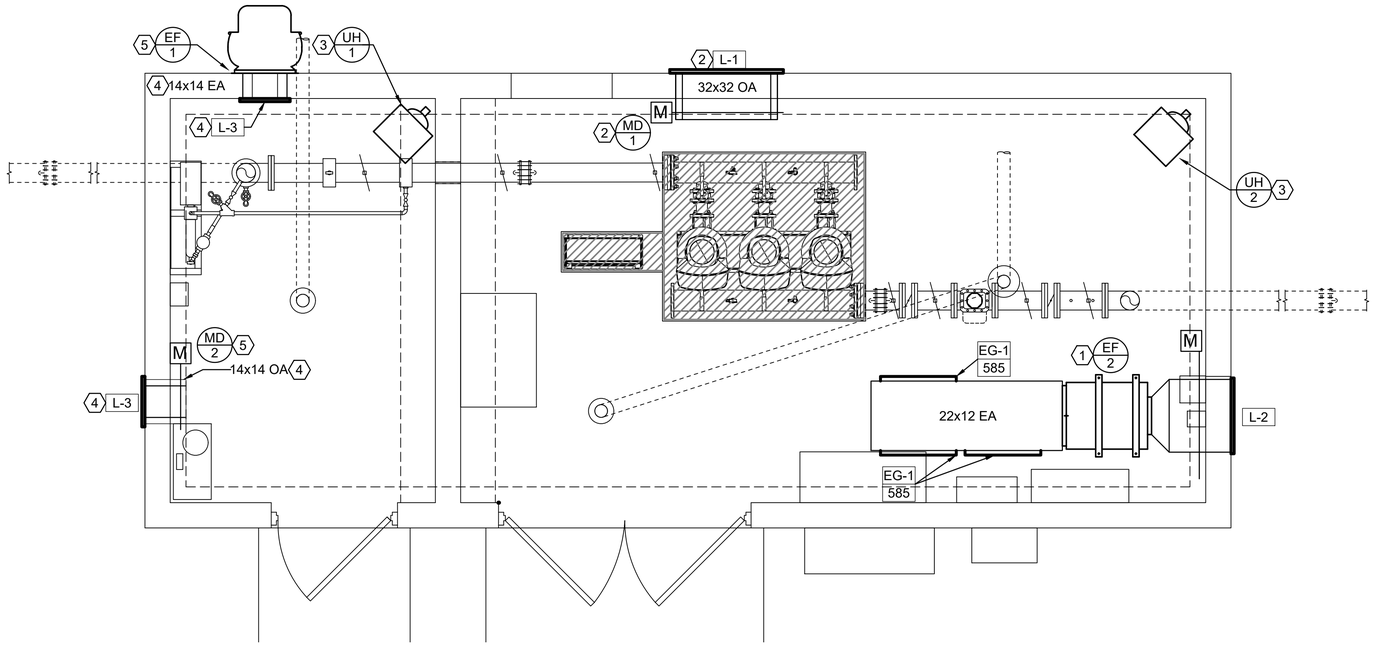

PLAN
SCALE: 1/2" = 1'-0"

SECTION
SCALE: 1/2" = 1'-0"

	SHEET NOTES:
1	PROVIDE INLINE EXHAUST FAN, MOTORIZED DAMPER, AND LOUVER. INTERLOCK WITH FRESH AIR INLET DAMPER AND DISTRICT SCADA SYSTEM.
2	PROVIDE INTAKE LOUVER, LINED DUCT ELBOW, AND MOTORIZED DAMPER. INTERLOCK DAMPER WITH EXHAUST FAN AND DISTRICT SCADA CONTROL SYSTEM.
3	PROVIDE ELECTRIC UNIT HEATERS. INSTALL PER MANUFACTURE'S RECOMMENDATIONS. TIE TEMPERATURE CONTROL INTO SCADA SYSTEM.
4	DUCTWORK & LOUVERS IN CHLORINE ROOM TO BE ALUMINUM.
5	FAN & DAMPER TO BE OPERATED ON SWITCH PLACED NEAR DOOR. PROVIDE WITH SIGNAGE ON DOOR FOR FAN TO BE TURNED ON FOR 5 MINUTES PRIOR TO ENTERING.

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PROFESSIONAL ENGINEER
03.02.22
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No. 69496
STATE OF ARIZONA

CONSTRUCTION ISSUE

NAVAJO TRIBAL UTILITY AUTHORITY
UTILITIES FOR THE NAVAJO NATION

DILKON PASS PIPELINE AND PUMP STATION

REVISIONS

REV	DATE	DESCRIPTION

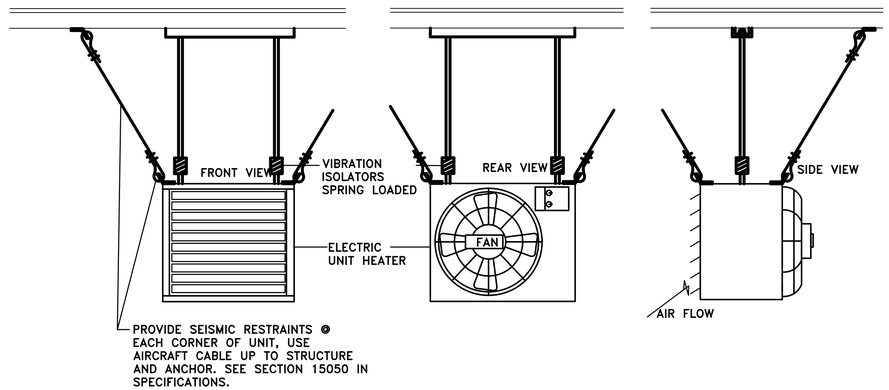
LINE IS 2 INCHES AT FULL SIZE

DESIGNED: E. RIGBY
DRAWN: E. RIGBY
CHECKED: J. LARSEN
CHECKED:------
APPROVED: W. PACKER
FILENAME H-101.dwg
BC PROJECT NUMBER 157520
CLIENT PROJECT NUMBER 00357.21
HVAC

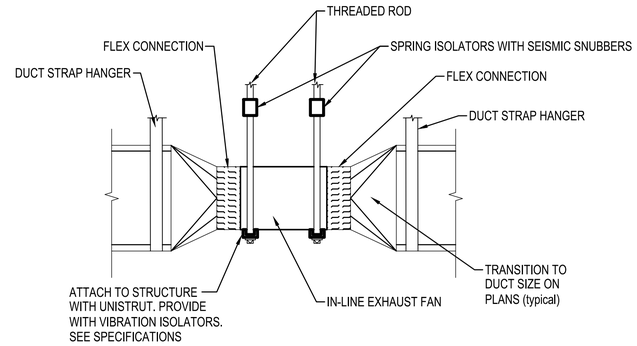
DILKON PASS PUMP STATION HVAC PLAN AND SECTION

DRAWING NUMBER
H-101

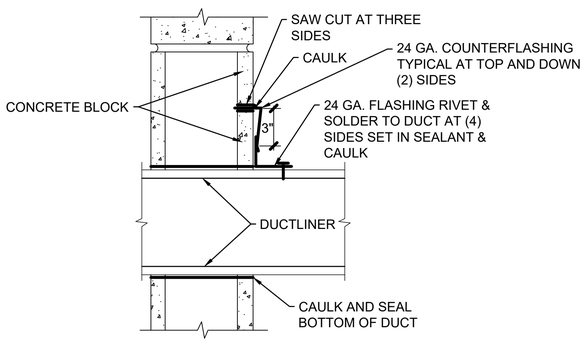
57 SHEET NUMBER OF 59



C5 ELECTRIC UNIT HEATER DETAIL
SCALE: NONE



B5 IN-LINE EXHAUST FAN DETAIL
SCALE: NONE



A5 DUCT THRU WALL DETAIL
SCALE: NONE

Brown AND Caldwell
SALT LAKE CITY, UT

WHW ENGINEERING INC.
PROFESSIONAL MECHANICAL ENGINEERING
1354 East 3300 South Suite 200
SALT LAKE CITY, UTAH 84106
(801)466-4321, FAX 466-8636
EMAIL: emailexco@whw-enghowling.com

PROFESSIONAL ENGINEER
03.02.22
WINWARD M. PACKER
No. 69496
STATE OF ARIZONA

CONSTRUCTION ISSUE

NAVAJO TRIBAL UTILITY AUTHORITY
UTILITIES FOR THE NAVAJO NATION

DILKON PASS PIPELINE AND PUMP STATION

REVISIONS

REV	DATE	DESCRIPTION

LINE IS 2 INCHES AT FULL SIZE

DESIGNED: E. RIGBY
DRAWN: E. RIGBY
CHECKED: J. LARSEN
CHECKED:-------
APPROVED: W. PACKER

FILENAME
H-102.dwg

BC PROJECT NUMBER
157520

CLIENT PROJECT NUMBER
00357.21

HVAC

HVAC DETAILS

DRAWING NUMBER
H-102

SHEET NUMBER 58 OF 59

Path: P:\2021\21161 DILKON PASS BPS & PIPELINE\DRAWINGS FILENAME: M 21161 DILKON PASS BPS & PIPELINE.DWG PLOT DATE: 3/2/2022 5:13 PM CAD USER: ETHAN RIGBY

EXHAUST FAN SCHEDULE

SYMBOL	MANUFACTURER & MODEL No.	SERVES	C.F.M.	STATIC PRESSURE IN. WG.	MAX NOISE SONES	MOTOR			OPER. WT. (LBS)	SCHEDULE NOTES
						V - Ø - Hz	HP	RPM		
EF 1	COOK 100 ACWB OR80	CHLORINE ROOM	350	0.35	7.6	115-1-60	1/6	1725	47	1,3,5,6
EF 2	COOK DB9	PUMP ROOM	1750	0.35	11.5	115-1-60	1/2	869	98	1,2,3,4

1. MANUFACTURER TO BE LOREN COOK, CARNES, GREENHECK, TWIN CITY JENCO, OR PRIOR APPROVED EQUAL.
2. INLINE FAN, SUPPORT FROM SPRING HANGERS.
3. PROVIDE WITH BACK-DRAFT DAMPER.
4. SEE DETAIL E ON SHEET E-102 FOR ONE-LINE CONTROL DIAGRAM.
5. FAN TO OPERATE BY SWITCH NEAR LIGHT. SIGNAGE ON DOOR TO RUN FAN FOR 5 MINUTES BEFORE ENTERING.
6. FAN PROVIDED SHALL BE COATED INSIDE AND OUT IN PHENOLIC EPOXY COATING. ALL INTERNAL FERROUS MATERIALS SHALL ALSO BE PROVIDE COATED WITH PHENOLIC EPOXY COATING. ALL FASTENERS SHALL BE STAINLESS STEEL HARDWARE.

ELECTRIC UNIT HEATER SCHEDULE

SYMBOL	MANUFACTURERS AND MODEL NO.	CFM	BTUH	ELECTRICAL			RPM	AIR TEMP RISE (F)	THROW (FT)	WEIGHT (LBS)	SCHEDULE NOTES
				SERVICE	KW	HP					
UH 1	MODINE HER30	380	10200	208-1-60	3	1/40	1550	25	12	34	1,2
UH 2	MODINE HER30	380	10200	208-1-60	3	1/40	1550	25	12	34	1,2

1. MANUFACTURER TO BE MODINE, MARLEY, QMARK, MARKEL, CHORMALOX, INDEECO, OR PRIOR APPROVED EQUAL.
2. PROVIDE WITH TEMPERATURE SENSOR AND TIE INTO SCADA SYSTEM. COORDINATE WITH SCADA CONTRACTOR.

REGISTER, LOUVER, & GRILLE SCHEDULE

SYMBOL	TYPE	SERVICE	MAX CFM	NOMINAL SIZE	THROAT SIZE	CEILING TYPE	FT./MIN.	MANUF. & MODEL	SCHEDULE NOTES
L-1	WALL	INTAKE	1750	34X34	34X34	N/A	500	RUSKIN ELF811	1,2,3,4,5
L-2	WALL	EXHAUST	1750	28X40	28X40	N/A	600	RUSKIN ELF811	1,2,3,4,5
L-3	WALL	INTAKE	350	16x16	14x14	N/A	500	RUSKIN ELF811	1,2,3,4,5
EG-1	DUCT	EXHAUST	750	24X12	24X12	DUCT MOUNTED	500	PRICE 500	2,4,5

1. SEAL ALL PENETRATIONS WEATHER TIGHT.
2. MAXIMUM FT/MIN AT CFM LISTED.
3. PROVIDE TRANSITION TO LOUVER THROAT SIZE AS REQUIRED TO DUCTWORK SHOWN ON PLAN.
4. MANUFACTURER TO BE RUSKIN, GREENHECK, POTTORF, CARNES, OR PRIOR APPROVED EQUAL.
5. FINISH SHALL BE SPECIFIED BY ARCHITECT.

CONTROL DAMPER SCHEDULE

SYMBOL	SIZE	NO. REQUIRED	LOCATION	MANUF.& MODEL	COMMENTS
MD 1	32"X32"	1	PUMP RM.	RUSKIN CD40	2,3,4
MD 2	14"X14"	1	CHLORINE RM.	RUSKIN CD40	1,3,4

1. DAMPER TO BE LOW LEAKAGE OF ALUMINUM CONSTRUCTION.
2. ACTUATOR TO BE BELIMO 120/1/60.
3. DAMPER MANUFACTURER TO BE RUSKIN, GREENHECK, POTTORF, CARNES, OR PRIOR APPROVED EQUAL.

Brown AND Caldwell
SALT LAKE CITY, UT

WHW ENGINEERING INC.

PROFESSIONAL ENGINEER 03.02.22 WINWARD M. PACKER No. 69496 STATE OF ARIZONA

CONSTRUCTION ISSUE

NAVAJO TRIBAL UTILITY AUTHORITY — NTUA — UTILITIES FOR THE NAVAJO NATION

DILKON PASS PIPELINE AND PUMP STATION

REVISIONS

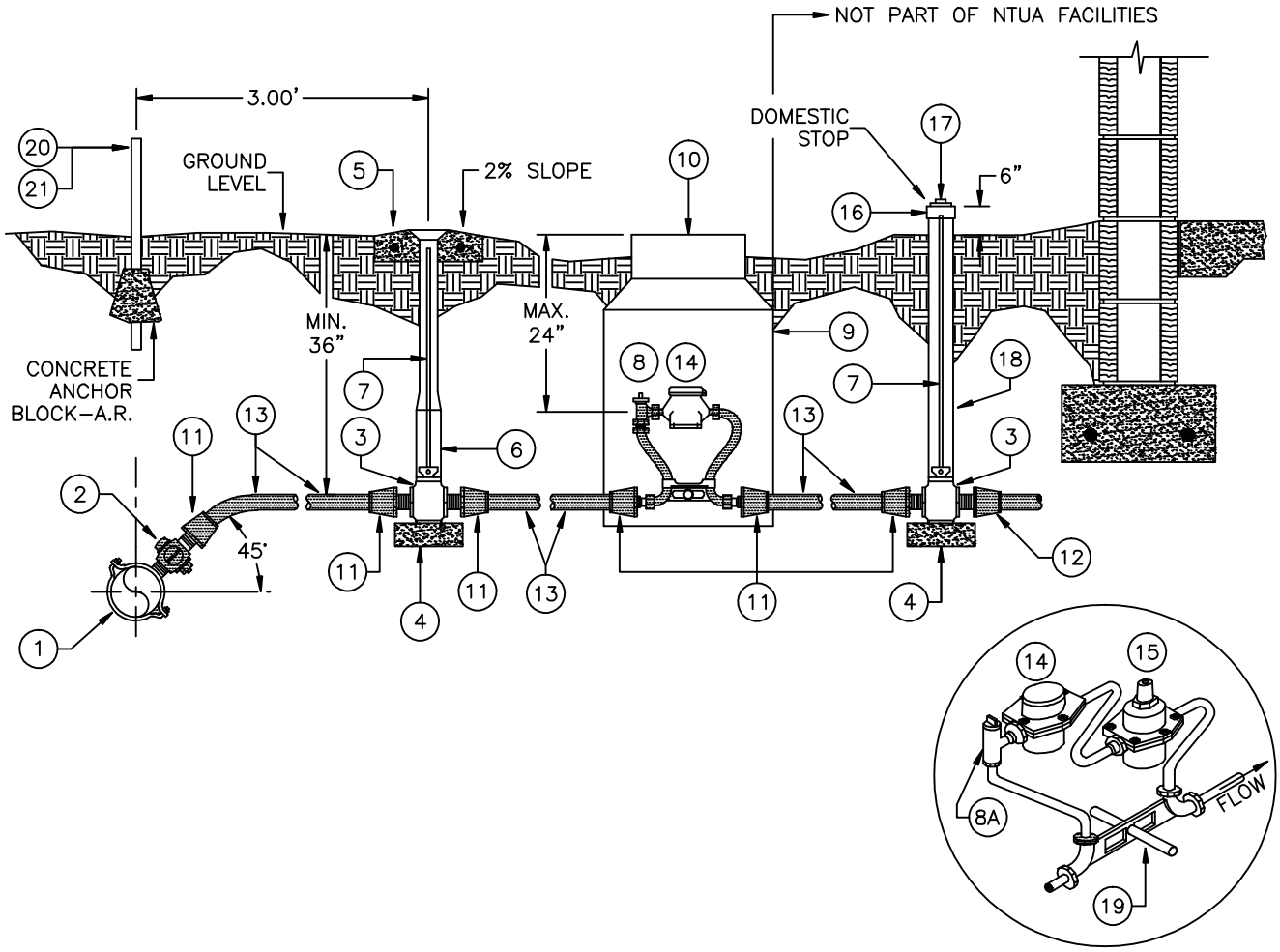
REV	DATE	DESCRIPTION

LINE IS 2 INCHES AT FULL SIZE

DESIGNED: E. RIGBY
DRAWN: E. RIGBY
CHECKED: J. LARSEN
CHECKED:-------
APPROVED: W. PACKER
FILENAME H-501.dwg
BC PROJECT NUMBER 157520
CLIENT PROJECT NUMBER 00357.21
HVAC

HVAC SCHEDULES

DRAWING NUMBER
H-501



NOTES:

1. SELECT EITHER PAGE 2a OR 2b BASED ON METER SIZE.
2. TEST DURATION SHALL BE FOR 2 HOURS.

DATE PERFORMED: _____. LAB SAMPLE NO.: _____. INITIALED (NTUA): _____.

INDEX	SHEET
1" WATER SERVICE	1 of 5
MATERIAL LIST: 5/8" x 3/4" METER	2a of 5
MATERIAL LIST: 1" METER	2b of 5
GENERAL NOTES	3 of 5
PROPOSED CONSTRUCTION DRAWING	4 of 5
INDIVIDUAL AS–BUILT	5 of 5

AS–BUILT LOCATION OF TAP	
SYSTEM NAME	
PROJECT NO.	
SHEET NO.	
LINE NO.	
STATION NO.	

DESIGNED BY:	NTUA
SURVEYED BY:	
DRAWN BY:	NTUA
APPROVED BY:	NTUA
DATE:	04/08
PROJECT NO.	
SCALE:	NTS
ACAD FILENAME:	Water Standard
DWG. NO.	WS-1.DWG

NAVAJO TRIBAL UTILITY AUTHORITY
HQ CIVIL ENGINEERING DEPARTMENT

1" WATER SERVICE FOR A 5/8" x 3/4" OR 1" METER

HQ–ENGINEERING FT.DEFIANCE, AZ

REVISIONS			
No.	Date	Brief	By
01	04/08	Revised	L.H.
02			
03			
04			
05			
06			

MATERIAL LIST

ITEM	QUAN	DESCRIPTION
1	1	SADDLE, BRASS, 1" FIPT x APPROPRIATE PIPE TYPE, O.D., AND LINE PRESSURE
2	1	CORPORATION STOP, 1" MIPT x 1" FIPT, MUELLER H-10046, OAE
3	1	CURB STOP, 1" FIPT x 1" FIPT, MINNEAPOLIS PATTERN W/ O-RING, MUELLER H-10287, OAE
4	A.R.	CONCRETE BLOCK OR BRICK
5	A.R.	CONCRETE COLLAR, 18" SQUARE x 4" THICK, W/ #4 REBARS, E.W.O.C.
6	1	CURB VALVE BOX, EXTENSION TYPE, MUELLER H-10302, W/ 2" x 1 1/2" BUSHING, OAE
7	2	STATIONARY ROD 36" LONG, MUELLER PART #84338, SECURED TO THE CURB STOP W/ COTTER PIN
8	1	COPPERSETTER W/ VALVED 12" RISER FOR 5/8" x 3/4" WATER METER, FORD NO. VB72-12W-FF-44,
		OAE, W/ 1" IP UNION NUT/SWIVEL ASSEMBLY CONNECTION ON INLET, OUTLET, AND BRACING EYE
8a	1	TANDEM COPPERSETTER WITH VALVED 12" RISER, 5/8" X 3/4" WATER METER, FORD NO.
		TVB-72-12W-FF-44, OAE, W/ TWO REGULATOR ADAPTERS FOR THE PRV
9	1	METER CAN, 20" O.D. x 30" HT., DFW PLASTIC, DFW 2030 B SERIES "T" TOP
10	1	METER BOX COVER W/ FROST PLATE, FOR 20" METER CAN, 11 1/2" MINIMUM LID
		OPENING, CASTING M-70
11	6	INSTA-TITE FITTING, 1" MIPT x 1" STAB FOR SIDR 7 P.E. PIPE, MUELLER H15426
12	1	CONNECTOR/ADAPTER, 1" MIPT x APPROPRIATE PIPE TYPE AND O.D.
13	A.R.	PIPE, 1" P.E., ASTM D-2239, SIDR 7, 200 PSI, 200' MAX.
14	1	METER, POSITIVE DISPLACEMENT, NEPTUNE, SR, 5/8" x 3/4", GALLONS, W/ FROST PLATE
15	1	PRV, WILKENS 600 OR WATTS 25 AUB, 3/4" FIPT
16	1	ADAPTER, 3", HUB x FIPT PVC-DWV
17	1	CLEANOUT PLUG, 3" MIPT, PVC-DWV
18	1	RISER, 3" x 36" LONG, PVC-DWV
19	1	STABILIZER, 1/2" O.D. x 12" LONG PIPE, PVC, SCH. 40
20	A.R.	BLUE CARSONITE MARKER POST
21	A.R.	"WATERLINE WARNING" DECAL (FOR ITEM 20)

NOTES:

1. A.R. = AS REQUIRED
2. DECAL TO BE AFFIXED TO ITEM NO. 20.
3. NORMAL FLOW RATE = 1-20 GPM.
4. NTUA WILL NOT PROVIDE WATER METERS FOR SUBDIVISIONS AND DEVELOPERS.
5. WATER METER SERIAL NUMBER:________________________
6. SADDLE SIZE:________________________

DESIGNED BY:	NTUA
SURVEYED BY:	
DRAWN BY:	NTUA
APPROVED BY:	NTUA
DATE:	04/08
PROJECT NO.	
SCALE:	NTS
ACAD FILENAME:	Water Standard
DWG. NO.	WS-1a.dwg

NAVAJO TRIBAL UTILITY AUTHORITY
HQ CIVIL ENGINEERING DEPARTMENT

MATERIAL LIST: 1" SERVICE WITH 5/8" x 3/4" METER

HQ-ENGINEERING FT.DEFIANCE, AZ

REVISIONS

No.	Date	Brief	By
01	04/08	Revised	L.H.
02			
03			
04			
05			
06			

MATERIAL LIST

ITEM	QUAN	DESCRIPTION
1	1	SADDLE, BRASS, 1" FIPT x APPROPRIATE PIPE TYPE, O.D., AND LINE PRESSURE
2	1	CORPORATION STOP, 1" MIPT x 1" FIPT, MUELLER H-10046, OAE
3	1	CURB STOP, 1" FIPT x 1" FIPT, MINNEAPOLIS PATTERN W/ O-RING, MUELLER H-10287, OAE
4	A.R.	CONCRETE BLOCK OR BRICK
5	A.R.	CONCRETE COLLAR, 18" SQUARE x 4" THICK, W/ #4 REBARS, E.W.O.C.
6	1	CURB VALVE BOX, EXTENSION TYPE, MUELLER H-10302, W/ 2" x 1 1/2" BUSHING, OAE
7	2	STATIONARY ROD, 36" LONG, MUELLER PART #84338, SECURED TO THE CURB STOP W/ COTTER PIN
8	1	COPPERSETTER W/ VALVED 12" RISER, 1" WATER METER, FORD NO. VB74-12W-FF-44,
		OAE, W/ 1" IP UNION NUT/SWIVEL ASSEMBLY CONNECTION ON INLET, OUTLET, AND BRACING EYE
8a	1	TANDEM COPPERSETTER WITH VALVED 12" RISER, 1" WATER METER, FORD NO. TVB-74-12W-FF-44,
		OAE, W/ TWO REGULATOR ADAPTERS FOR THE PRV
9	1	METER CAN, 20" O.D. x 30" HT., DFW PLASTIC, DFW 2030 B SERIES "T" TOP
10	1	METER BOX COVER W/ FROST PLATE, FOR 20" METER CAN, 11 1/2" MINIMUM LID
		OPENING, CASTING M-70
11	6	INSTA-TITE FITTING, 1" MIPT x 1" STAB FOR SIDR 7 P.E. PIPE, MUELLER H15426
12	1	CONNECTOR/ADAPTER, 1" MIPT x APPROPRIATE PIPE TYPE AND O.D.
13	A.R.	PIPE, 1" P.E., ASTM D-2239, SIDR 7, 200 PSI, 200' MAX.
14	1	METER, POSITIVE DISPLACEMENT, SENSUS, SR, 1", GALLONS, W/ FROST PLATE
15	1	PRV, WILKENS 600 OR WATTS 25 AUB, 1" FIPT
16	1	ADAPTER, 3", HUB x FIPT PVC-DWV
17	1	CLEANOUT PLUG, 3" MIPT, PVC-DWV
18	1	RISER, 3" x 36" LONG, PVC-DWV
19	1	STABILIZER, 1/2" O.D. x 12" LONG PIPE, PVC, SCH. 40
20	A.R.	BLUE CARSONITE MARKER POST
21	A.R.	"WATERLINE WARNING" DECAL (FOR ITEM 20)

NOTES:

1. A.R. = AS REQUIRED
2. DECAL TO BE AFFIXED TO ITEM NO. 20.
3. NORMAL FLOW RATE = 3-50 GPM.
4. WATER METER SERIAL NUMBER:________________________
5. SADDLE SIZE:________________________

DESIGNED BY:	NTUA
SURVEYED BY:	
DRAWN BY:	NTUA
APPROVED BY:	NTUA
DATE:	04/08
PROJECT NO.	
SCALE:	NTS
ACAD FILENAME:	Water Standard
DWG. NO.	WS-1b.DWG

NAVAJO TRIBAL UTILITY AUTHORITY
HQ CIVIL ENGINEERING DEPARTMENT

MATERIAL LIST: 1" SERVICE WITH 1" METER

HQ-ENGINEERING FT.DEFIANCE, AZ

REVISIONS

No.	Date	Brief	By
01	04/08	Revised	L.H.
02			
03			
04			
05			
06			

SHEET 3 OF 7

1. PROVIDE 10' MINIMUM HORIZONTAL SEPARATION IN SEPARATE TRENCHES BETWEEN WATER AND SEWER SERVICES, PAST THE BUILDING PLUMBING. PROVIDE 5' MINIMUM HORIZONTAL SEPARATION BETWEEN WATER SERVICE AND OTHER UTILITIES. FOR WATER AND SEWER CROSSING. PROVIDE A MINIMUM OF 12" VERTICAL CLEARANCE, PIPE O.D. TO PIPE O.D. IF WATER SERVICE CROSSES OTHER UTILITIES, ALL STIPULATIONS FOR THE OTHER UTILITY MUST BE MET.

2. BUILDING PLUMBING, WATER AND SEWER SERVICES TO BE INSTALLED IN ACCORDANCE WITH THE NATIONAL PLUMBING CODE ADOPTED BY THE NAVAJO NATION.

3. WATER SERVICES SHALL HAVE A MINIMUM COVER OF 36" AND SHALL BE INSTALLED IN CONFORMANCE WITH NTUA STANDARDS.

4. SADDLES SHALL BE SINGLE STRAP/BAND TYPE, FOR STEEL PIPE O.D. PVC. SADDLES SHALL BE DOUBLE STRAP/BAND TYPE, FOR D.I., A.C., OR C-900 PIPE. ON EXISTING 2" PIPING, A 2" x 1" PVC TEE SHALL BE USED. CONTACT NTUA HEADQUARTERS ENGINEERING ON PIPING SMALLER THAN 2".

5. PROVIDE THE AS-BUILT SWING TIE INFORMATION FOR THE TAP POINT AND OTHER APPURTENANCES INSTALLED, ON SHEET 5 of 5.

6. THE WATER METER SHALL BE CENTERED AND SET A MAX. OF 24" BELOW THE TOP OF THE METER BOX COVER.

7. THE METER CAN SHALL BE LOCATED JUST BEYOND THE SIDEWALK AT THE PROPERTY LINE OR WITH OWNER'S PERMISSION A MINIMUM OF 10' FROM THE BUILDING.

8. WATER SERVICE LINES ARE LIMITED TO A MAXIMUM OF 200'. IF THE PRESSURE AT THE HOME SITE IS ABOVE 70 PSI, INSTALL THE APPROPRIATE TANDEM COPPERSETTER WITH AN INDIVIDUAL PRV (ITEM 8A).

9. USE FIELD MARKERS WHERE APPROPRIATE.

10. SUBMIT CONSTRUCTION COST OF NEW INSTALLATION UP TO AND INCLUDING THE METER. INDICATE AS FOLLOWS: A. MATERIAL COST, B. LABOR COST, C. EQUIPMENT COST, D. TOTAL CONSTRUCTION COST. THE COST SHALL BE SHOWN ON SHEET 5 of 5 AND THE TRANSFER AGREEMENT.

11. SHEETS 4 OF 5 AND 5 OF 5 ARE FOR RESIDENTIAL INSTALLATIONS ONLY. ALL OTHER PROJECTS, SUBMIT 4 SETS OF COMPLETE DRAWINGS.

DESIGNED BY:	NTUA
SURVEYED BY:	
DRAWN BY:	NTUA
APPROVED BY:	NTUA
DATE:	04/08
PROJECT NO.	
SCALE:	NTS
ACAD FILENAME:	Water Standard
DWG. NO.	WS-1c.DWG

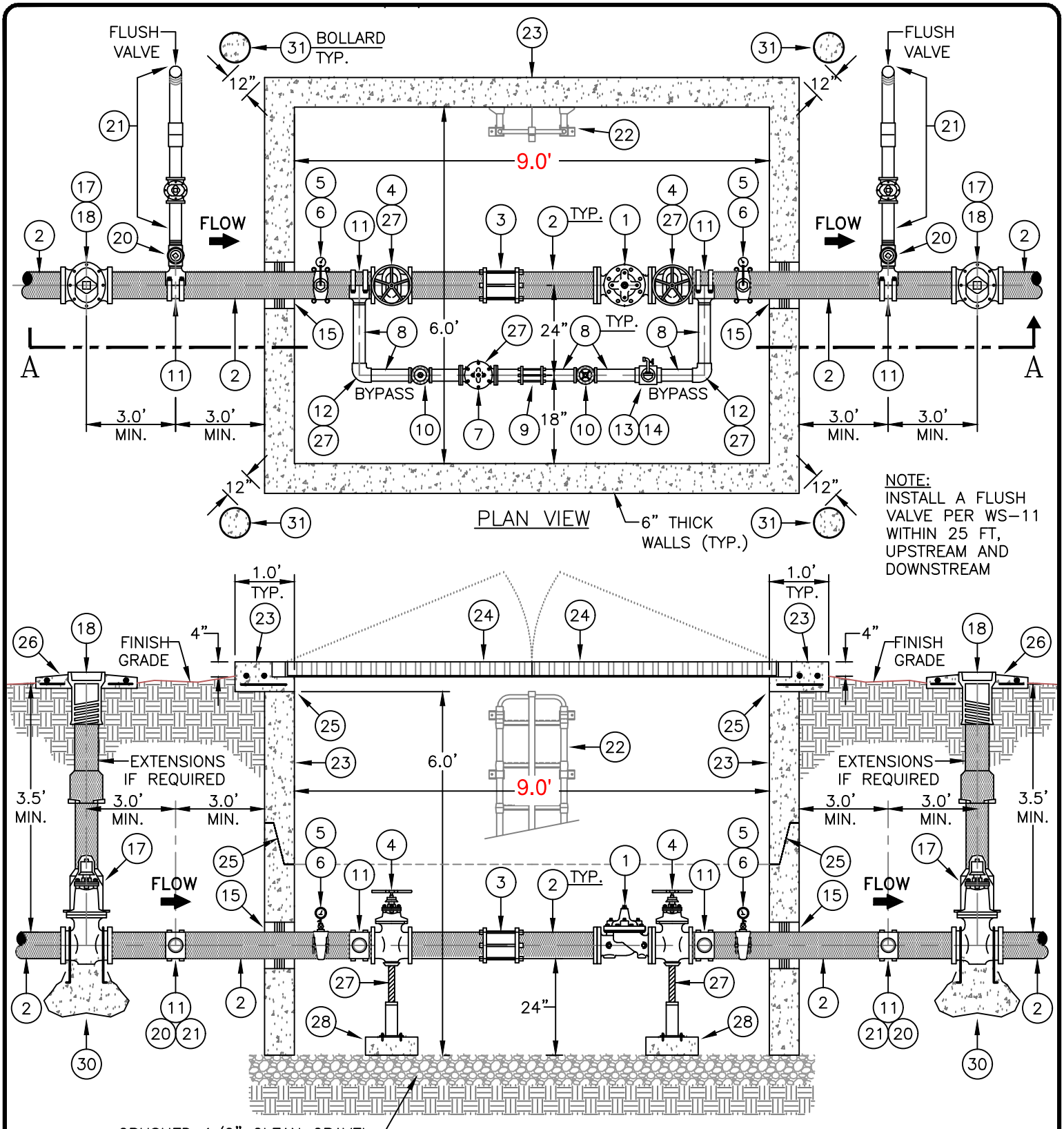
NAVAJO TRIBAL UTILITY AUTHORITY
HQ CIVIL ENGINEERING DEPARTMENT

GENERAL NOTES FOR WATER SERVICE

HQ-ENGINEERING FT.DEFIANCE, AZ

REVISIONS

No.	Date	Brief	By
01	04/08	Revised	L.H.
02			
03			
04			
05			
06			



SHEET 1 OF 2

DESIGNED BY:	NTUA-HQ
SURVEYED BY:	–
DRAFTED BY:	NTUA-HQ
APPROVED BY:	NTUA-HQ
DATE:	01/2019
PROJECT NO.	–
SCALE:	NTS
ACAD FILENAME:	*2019 NTUA Std. Dtls. for Water.dwg*
DETAIL NO.	WS-4b

NAVAJO TRIBAL UTILITY AUTHORITY
ENGINEERING & CONSTRUCTION OPERATIONS DIVISION

4" x 2" P.R.V.

NTUA HEADQUARTERS **FT.DEFIANCE, AZ**

REVISIONS

No.	Date	Brief	By
01	09/15	2015 Addition	A.S.
02	01/19	2019 Update	A.S.
03			
04			
05			
06			

4" x 2" P.R.V.

(#) MATERIAL LIST

ITEM	QTY	DESCRIPTION
1	1	4" CLA-VAL, PRESSURE REDUCING VALVE, THREADED ENDS, STAINLESS STEEL (S.S.) TRIM & PILOT TUBING, 90 SERIES W/ OPTIONS A, B, C, D, V & M
2	A.R.	4" DUCTILE IRON (D.I.) PIPE, CLASS 350, PLAIN END, CUT AS NEEDED
3	1	4" DRESSER COUPLING (6" LONG FOR D.I. PIPE)
4	2	4" GATE VALVE, F.I.P.T., N.R.S., R.H.T., BRASS HAND WHEEL
5	2	2" DOUBLE STRAP W/ 2" x 3/4" BUSHING AND 3/4" x 1/4" BUSING FOR PRESSURE GAGE
6	2	PRESSURE GAUGE W/ 1/4" BRASS SHUTOFF VALVE
7	1	2" CLA-VAL, PRESSURE REDUCING VALVE, THREADED ENDS, STAINLESS STEEL (S.S.) TRIM & PILOT TUBING, 90 SERIES W/ OPTIONS A, B, C, D, V & M
8	A.R.	2" S.S. PIPE, THREADED, CUT AS NEEDED
9	1	2" DRESSER COUPLING (6" LONG FOR S.S. PIPE)
10	2	2" GATE VALVE, F.I.P.T., N.R.S., R.H.T., BRASS HAND WHEEL
11	4	4" x 2" TAP SADDLE
12	2	2" 90° S.S. ELBOW, F.I.P.T.
13	1	2" S.S. HOSE BIB
14	1	2" S.S. TEE W/ 2" x 3/4" BUSHING AND 3/4' x 1/4" BUSHING FOR HOSE BIB
15	2	VAULT BORE DONUT, 6" O.D. / 4" I.D.
16	2	4" D.I. 'E-Z' FLANGED ADAPTER
17	2	4" GATE VALVE, M.J., RESILIENT SEAT, FLANGED, N.R.S., R.H.T., W/ 2" OPERATING NUT
18	4	VALVE BOX, 2-PIECE SCREW TYPE, 5-1/4" SHAFT W/ CAST IRON DROP LID
19	-	4" C-900 PVC PIPE
20	2	2" CORPORATION STOP, MIPT x FIPT
21	2	INSTALL 2" FLUSH VALVE PER NTUA STD. DTL. WS-11 (AFTER THE CORP. STOP)
22	1	'LANE' POLYPROPYLENE VAULT LADDER W/ PULL-UP HANDRAIL (5 RUNG)
23	1	9' x 6' x 6' (INT. DIM.) PRECAST CONCRETE VAULT (4,000 PSI MIN.), 6" THICK WALLS W/ 6" THICK REINFORCED CONCRETE TOP (NON-TRAFFIC RATED) AND 6" REINFORCED CONCRETE BASE
24	1	ACCESS COVER, 6' x 6' (INT. DIM) SQ., INSULATED, DOUBLE DOOR COVER AND SAFETY GRATE, ALUMINUM CHANNEL FRAME W/ T-HANDLE SLAM LOCK AND COVERED PADLOCK CLIP
25	A.R.	VAULT JOINTS TO BE SEALED WITH BITUMASTIC GASKET
26	4	24" x 24" x 4" CONCRETE COLLAR W/ #4 REBAR, E.W., INDICATE PIPE SIZE & FLOW DIRECTION
27	5	ADJUSTABLE METAL PIPE SUPPORT (UNDER 4" VALVES AND AT 2" 90° ELBOWS & 2" P.R.V.)
28	5	12" x 12" x 4" CONC. BLOCK
29	-	NOT USED
30	A.R.	CONCRETE ANCHOR BLOCK PER NTUA STD. DTL. WS-19 & WS-19a
31	4	6" DIA. BOLLARDS AT 12" MIN. FROM VAULT CORNERS PER MAG. STD. 140, TYPE 1

GENERAL NOTES:

1. PROVIDE ADEQUATE CLEARANCE BETWEEN FLANGE BOLTS AND VAULT WALLS FOR MAINTENANCE.
2. GATE VALVES TO BE SUPPORTED ON 95% STANDARD PROCTOR.
3. ALL PIPES AND FITTINGS 4" OR LESS TO BE STAINLESS STEEL.
4. HEX HEAD BOLTS/NUTS TO BE STAINLESS STEEL, TYPE 304.
5. A.R. = AS REQUIRED.
6. INSTALL GATE VALVE AND FLUSH VALVE WITHIN 25 FT OF PRV VAULT.

DESIGNED BY:	NTUA-HQ
SURVEYED BY:	-
DRAFTED BY:	NTUA-HQ
APPROVED BY:	NTUA-HQ
DATE:	01/2019
PROJECT NO.	-
SCALE:	NTS
ACAD FILENAME:	2019 NTUA Std. Dtls. for Water.dwg
DETAIL NO.	WS-4c

NAVAJO TRIBAL UTILITY AUTHORITY
ENGINEERING & CONSTRUCTION OPERATIONS DIVISION

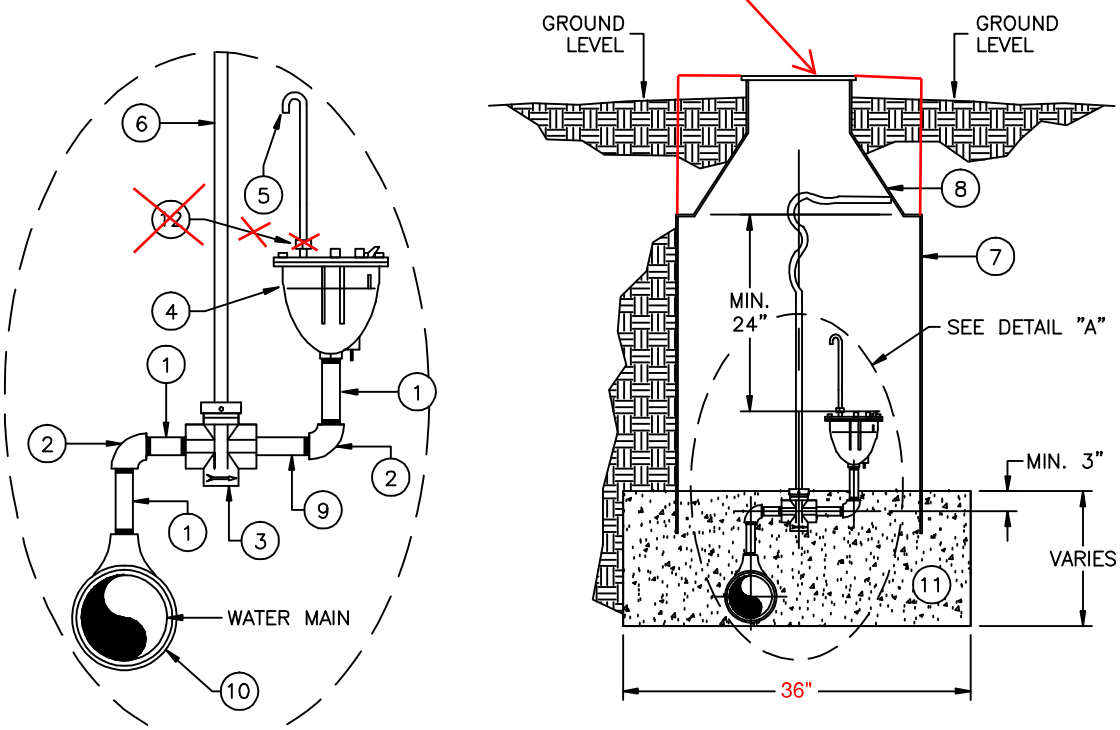
MATERIAL LIST:
4" x 2" P.R.V.

NTUA HEADQUARTERS **FT.DEFIANCE, AZ**

REVISIONS

No.	Date	Brief	By
01	09/15	2015 Addition	A.S.
02	01/19	2019 Update	A.S.
03			
04			
05			
06			

24" LID



DETAIL "A"

MATERIAL LIST		
ITEM	QUAN	DESCRIPTION
1	3	1" x 3" NIPPLE, BRASS
2	2	1" x 90° ELBOW, BRASS
3	1	1" CURB STOP VALVE, FIPT, MUELLER H-10287, OAE
4	1	1" COMBINATION AIR RELEASE/VACUUM VALVE
5	1	1" O.D. PIPE, BRASS , 12" MIN.
6	1	STATIONARY ROD, 42"
7	1	METER CAN, 36" O.D. x 30" DEPTH, SONOLOC
8	1	METER CAN COVER W/ DOUBLE LID (FROST PLATE) FOR 36" O.D. CAN, CASTING M-70
9	1	1" x 6" NIPPLE, BRASS
10	1	SADDLE, BRASS, 1" TAP x APPROPRIATE PIPE O.D. SIZE
11	3 CF*	1" TO 2" FILTER ROCK
~~12~~	~~1~~	~~1" UNION~~

*CF = CUBIC FEET

DESIGNED BY:	NTUA
SURVEYED BY:	
DRAWN BY:	NTUA
APPROVED BY:	NTUA
DATE:	04/08
PROJECT NO.	
SCALE:	NTS
ACAD FILENAME:	Water Standard
DWG. NO.	WS-10.DWG

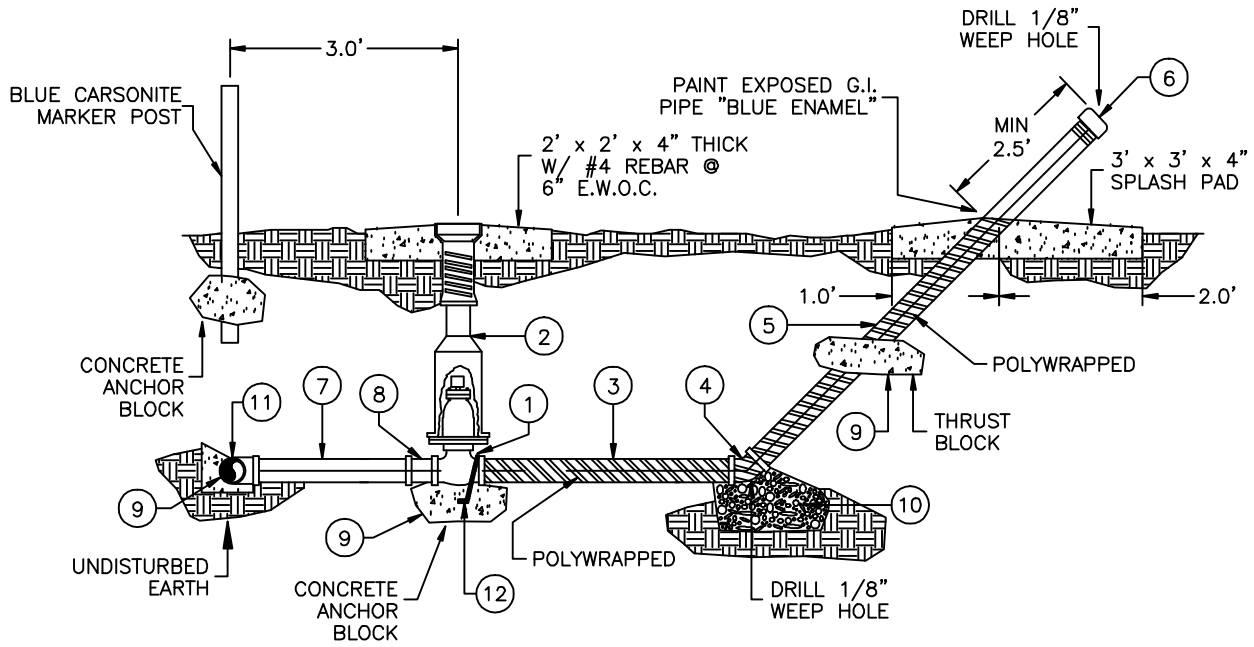
NAVAJO TRIBAL UTILITY AUTHORITY
HQ CIVIL ENGINEERING DEPARTMENT

AIR RELEASE VALVE DETAIL

HQ-ENGINEERING FT.DEFIANCE, AZ

REVISIONS			
No.	Date	Brief	By
01	04/08	Revised	L.H.
02			
03			
04			
05			
06			

NTUA



MATERIAL LIST		
ITEM	QUAN	DESCRIPTION
1	1	2' GATE VALVE, C.I., FIPT, RW, NRS, RHT, W/ 2' OPERATING NUT, MUELLER A-2360-37
2	1	VALVE BOX, SCREW-TYPE, C.I., 2 PIECE, 5 1/4" SHAFT, TYLER 6850
3	1	2" x 3' PIPE (MIN.), G.I., COATED OR POLYWRAPPED
4	1	2" x 45° ELBOW, G.I., W/ 1/8" WEEP HOLE
5	1	2" PIPE, G.I. x CUT TO LENGTH AS NEEDED
6	1	2" CAP, G.I. W/ 1/8" VENT HOLE
7	1	2" PIPE, PVC CUT TO LENGTH AS NEEDED
8	1	2" ADAPTER, PVC, SLIP-GASKET x MIPT, SDR-21
9	A.R.	CONCRETE THRUST BLOCK, (DO NOT COVER JOINTS OR BOLTS), MIN. 1.5 CUBIC FEET
10	1.5 CF	CLEAN GRAVEL
11	1	MAIN LINE SADDLE OR TEE
12	A.R.	#4 REBAR

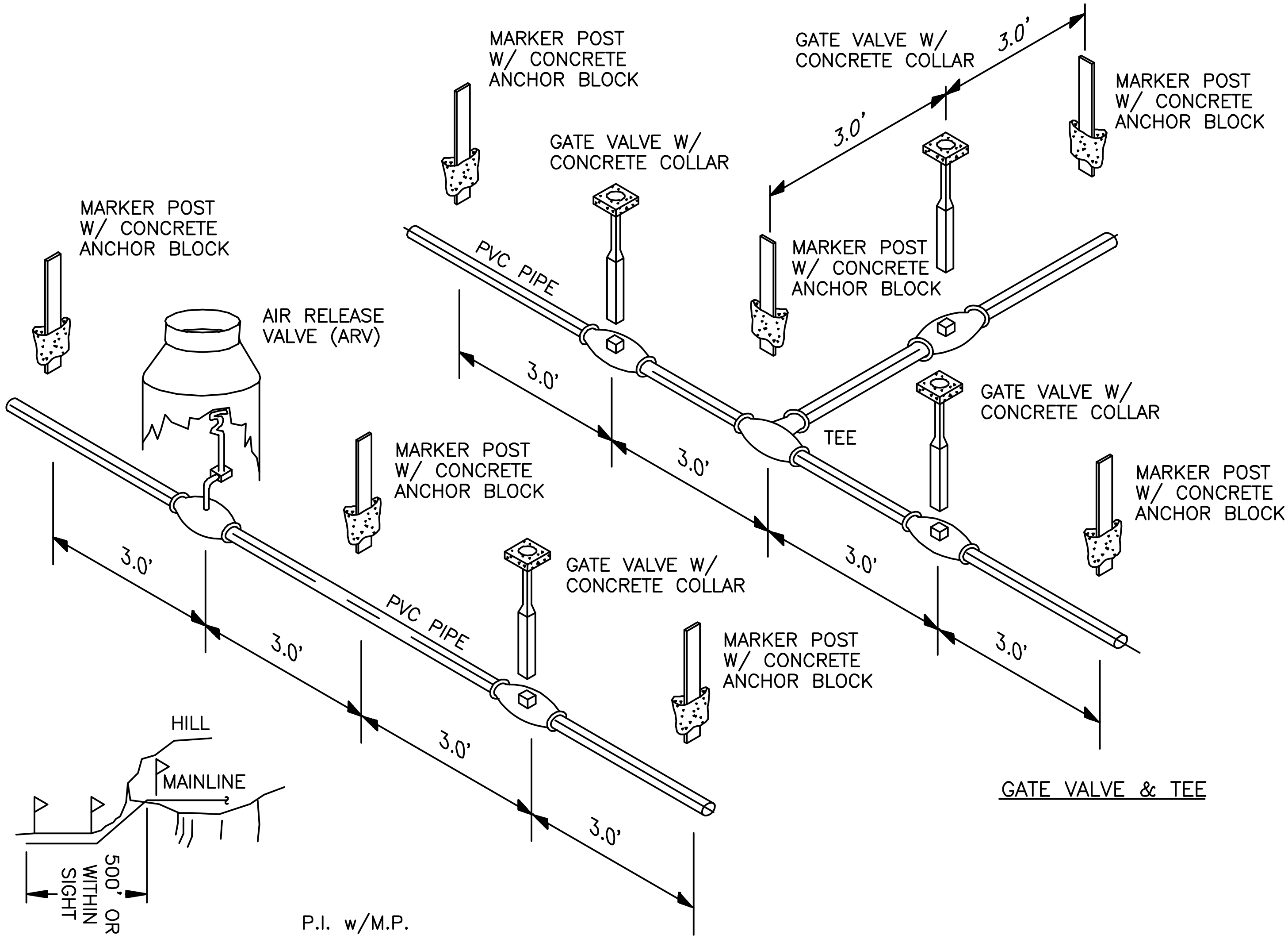
DESIGNED BY:	NTUA
SURVEYED BY:	
DRAWN BY:	NTUA
APPROVED BY:	NTUA
DATE:	04/08
PROJECT NO.	
SCALE:	NTS
ACAD FILENAME:	Water Standard
DWG. NO.	WS-11.DWG

NAVAJO TRIBAL UTILITY AUTHORITY
HQ CIVIL ENGINEERING DEPARTMENT

2" FLUSH VALVE DETAIL

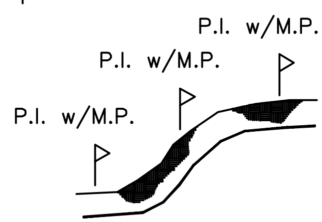
HQ-ENGINEERING FT.DEFIANCE, AZ

REVISIONS			
No.	Date	Brief	By
01	04/08	Revised	L.H.
02			
03			
04			
05			
06			



GATE VALVE & TEE

AIR RELEASE VALVE & GATE VALVE



P.I. AND GRADE CHANGES

NOTES:
1. ALL MARKER POSTS TO BE "BLUE" CARSONITE (TYP.).
2. MARKER POSTS ON ALL POINT OF INTERSECTIONS (P.I.).
3. MARKER POSTS ON ALL GRADE CHANGES.
4. MARKER POSTS WILL HAVE A MAX. HEIGHT OF 30 INCHES.

DESIGNED BY:	NTUA
SURVEYED BY:	
DRAWN BY:	NTUA
APPROVED BY:	NTUA
DATE:	04/08
PROJECT NO.	
SCALE:	NTS
ACAD FILENAME:	Water Standard
DWG. NO.	WS-13.DWG

NAVAJO TRIBAL UTILITY AUTHORITY
HQ CIVIL ENGINEERING DEPARTMENT

MARKER POST DETAILS

HQ-ENGINEERING FT.DEFIANCE, AZ

REVISIONS

No.	Date	Brief	By
01	04/08	Revised	L.H.
02			
03			
04			
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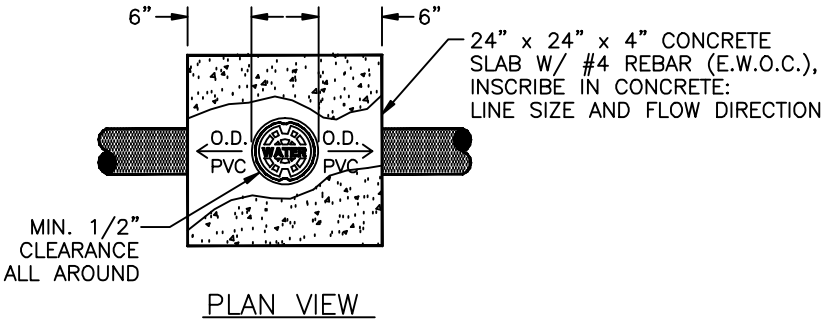
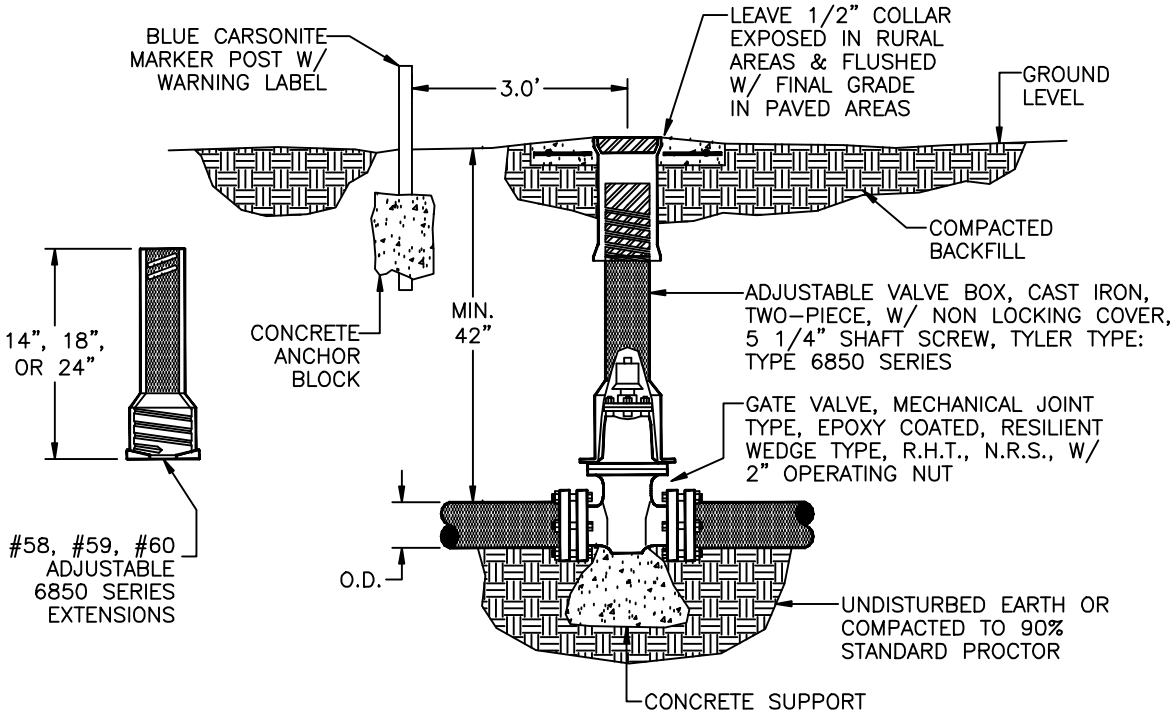


PLAN VIEW



NOTES:

1. IF APPROPRIATE, USE SERIES 2000 PV MEGALUG GLANDS FOR SDR-21, PVC TO SECURE GATE VALVE(S) TO OTHER FITTINGS/PIPE, USE OTHER MEGALUGS FOR DIFFERENT OUTSIDE DIAMETER PIPE/TYPE.
2. DO NOT COVER JOINTS AND BOLTS WITH CONCRETE.
3. SEE WS-13 FOR APPROPRIATE LOCATION OF MARKER POST.

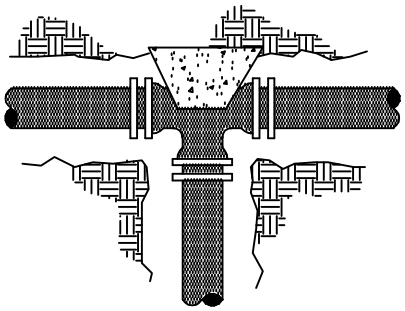
DESIGNED BY:	NTUA
SURVEYED BY:	
DRAWN BY:	NTUA
APPROVED BY:	NTUA
DATE:	04/08
PROJECT NO.	
SCALE:	NTS
ACAD FILENAME:	Water Standard
DWG. NO.	WS-14.DWG

NAVAJO TRIBAL UTILITY AUTHORITY
HQ CIVIL ENGINEERING DEPARTMENT

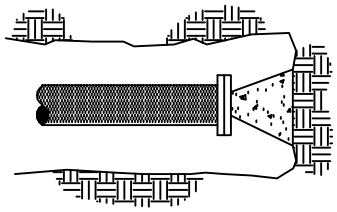
WATER MAIN VALVE INSTALLATION

HQ-ENGINEERING FT.DEFIANCE, AZ

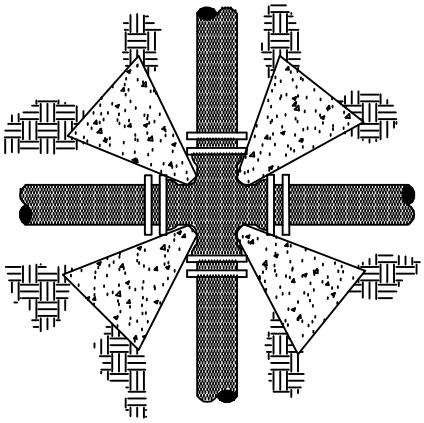
REVISIONS			
No.	Date	Brief	By
01	04/08	Revised	L.H.
02			
03			
04			
05			
06			



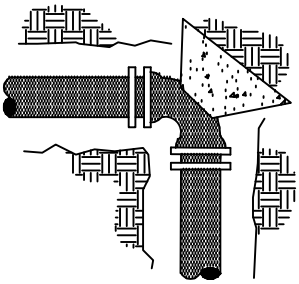
TEE
(PLAN VIEW)



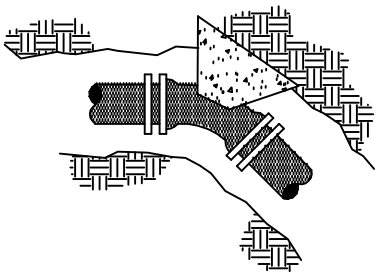
DEAD END CAPPED OR PLUG
(PLAN VIEW)



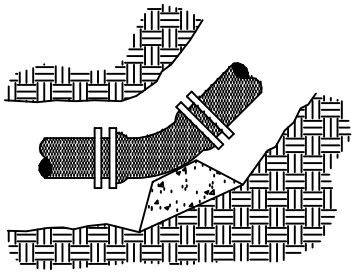
CROSS
(PLAN VIEW)



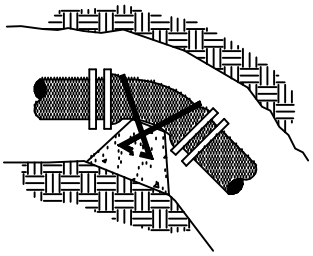
90° ELBOW
(PLAN VIEW)



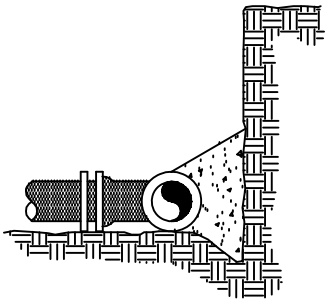
45° ELBOW
(PLAN VIEW)



VERTICAL BENDS
(SECTION VIEW)



VERTICAL GRAVITY THRUST BLOCK
(SECTION VIEW)



BEARING AREA
(SECTION VIEW)

MINIMUM BEARING AREAS IN SQUARE FEET				
PIPE SIZE	TEE & PLUG	90° ELBOW	45° OR 22 1/2° ELBOW	CROSS
2"	0.5	0.5	0.5	0.5
4"	1.5	2.0	1.5	1.0
6"	3.0	4.5	2.5	2.0
8"	5.0	7.5	4.0	4.0
10"	8.0	11.0	6.5	5.5
12"	11.0	15.5	9.0	8.0
14"	15.0	21.0	12.0	10.5
16"	19.0	27.0	15.5	13.5
18"	24.0	34.0	19.0	17.0

NOTES:

1. DO NOT COVER GASKETED JOINTS AND NUTS/BOLTS.

DESIGNED BY:	NTUA
SURVEYED BY:	
DRAWN BY:	NTUA
APPROVED BY:	NTUA
DATE:	04/08
PROJECT NO.	
SCALE:	NTS
ACAD FILENAME:	Water Standard
DWG. NO.	WS-19.DWG

NAVAJO TRIBAL UTILITY AUTHORITY
HQ CIVIL ENGINEERING DEPARTMENT

GRAVITY/THRUST BLOCK DETAILS

HQ-ENGINEERING FT.DEFIANCE, AZ

REVISIONS			
No.	Date	Brief	By
01	04/08	Revised	L.H.
02			
03			
04			
05			
06			

GRAVITY THRUST BLOCK

(ALSO TO BE USED IN UNSTABLE TRENCH CONDITIONS)

RESULTANT THRUST IN POUNDS OF FITTINGS AT 100 PSI WATER PRESSURE

TOTAL POUNDS					
PIPE SIZE	DEAD END	90° ELBOW	45° ELBOW	22 1/2° ELBOW	11 1/4° ELBOW
3"	1,232	1,742	943	481	241
4"	1,810	2,559	1,385	706	355
6"	3,739	5,288	2,862	1,459	733
8"	6,433	9,097	4,923	2,510	1,261
10"	9,677	13,685	7,406	3,776	1,897
12"	13,685	19,353	10,474	5,340	2,683
14"	18,385	26,001	14,072	7,174	3,604
16"	23,799	33,628	18,199	9,278	4,661
18"	29,865	42,235	22,858	11,653	5,855
20"	36,644	51,822	28,046	14,298	7,183
24"	52,279	73,934	40,013	20,398	10,249
30"	80,425	113,738	61,554	31,380	15,766
36"	115,209	162,931	88,177	44,952	22,585
42"	155,528	219,950	119,036	60,684	30,489
48"	202,683	286,637	155,127	79,083	39,733
54"	260,214	367,999	199,160	101,531	51,011
60"	298,121	421,606	228,172	116,321	58,442
64"	338,707	479,004	259,235	132,157	66,398

NOTES:

1. THE THRUST (IN TOTAL POUNDS) IN THE CHART IS BASED ON DUCTILE IRON OUTSIDE DIAMETER PIPE DIMENSION. SURGES SHOULD BE CONSIDERED AT TWICE THE NORMAL OPERATING PRESSURE. THE VOLUME OF THE GRAVITY THRUST BLOCK IS BASED ON CONCRETE AT 150 LBS./FT3.

2. TO OBTAIN VOLUME OF CONCRETE REQUIRED, USE:
   VOLUME OF CONRETE(FT3)= THRUST(LBS.) x SYSTEM PRESSURE(PSI)/100 PSI // 150 LBS./FT3.

   E.G.: CALCULATE THE VOLUME OF THE GRAVITY THRUST BLOCK FOR AN 8" x 45° BEND AT AN OPERATING PRESSURE OF 80 PSI.

   ANSWER: 4923 LBS. x 160 PSI/100 PSI DIVIDED BY 150 LBS./CUBIC FT. = 52.5 CUBIC FEET OR 2 CUBIC YARDS.

DESIGNED BY:	NTUA
SURVEYED BY:	
DRAWN BY:	NTUA
APPROVED BY:	NTUA
DATE:	04/08
PROJECT NO.	
SCALE:	NTS
ACAD FILENAME:	Water Standard
DWG. NO.	WS-19a.DWG

NAVAJO TRIBAL UTILITY AUTHORITY
HQ CIVIL ENGINEERING DEPARTMENT

GRAVITY/THRUST BLOCK CHART

HQ-ENGINEERING FT.DEFIANCE, AZ

REVISIONS			
No.	Date	Brief	By
01	04/08	Revised	L.H.
02			
03			
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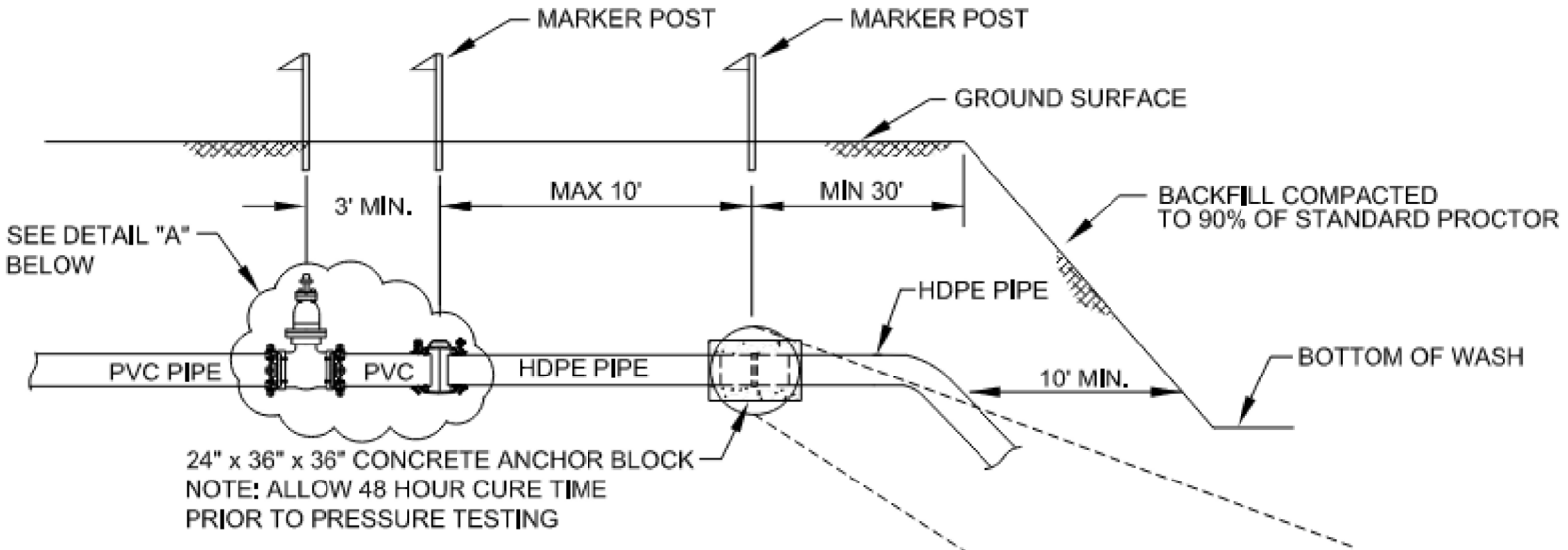
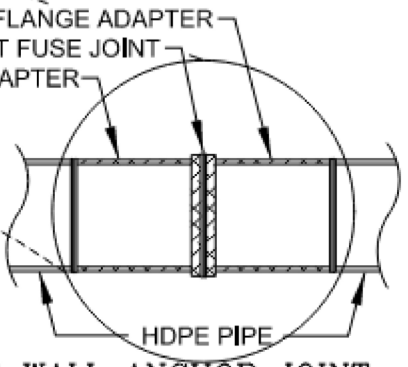
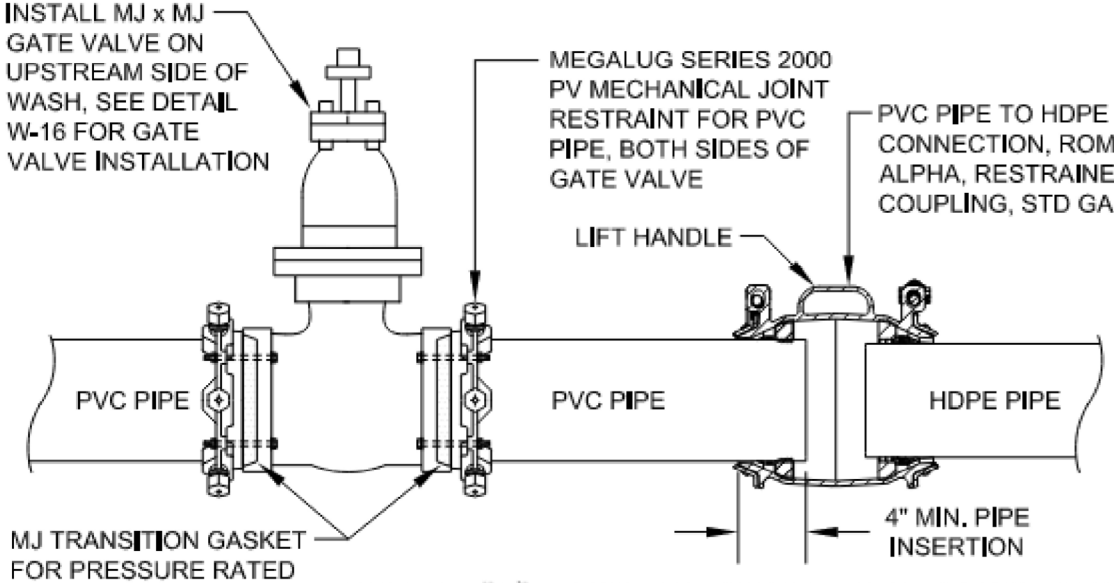


PROFILE VIEW
TYP. HDPE PIPE WASH CROSSING DETAIL
N.T.S.



HDPE WALL ANCHOR JOINT



DETAIL "A" -PVC TO HDPE PIPE CONNECTION
N.T.S.

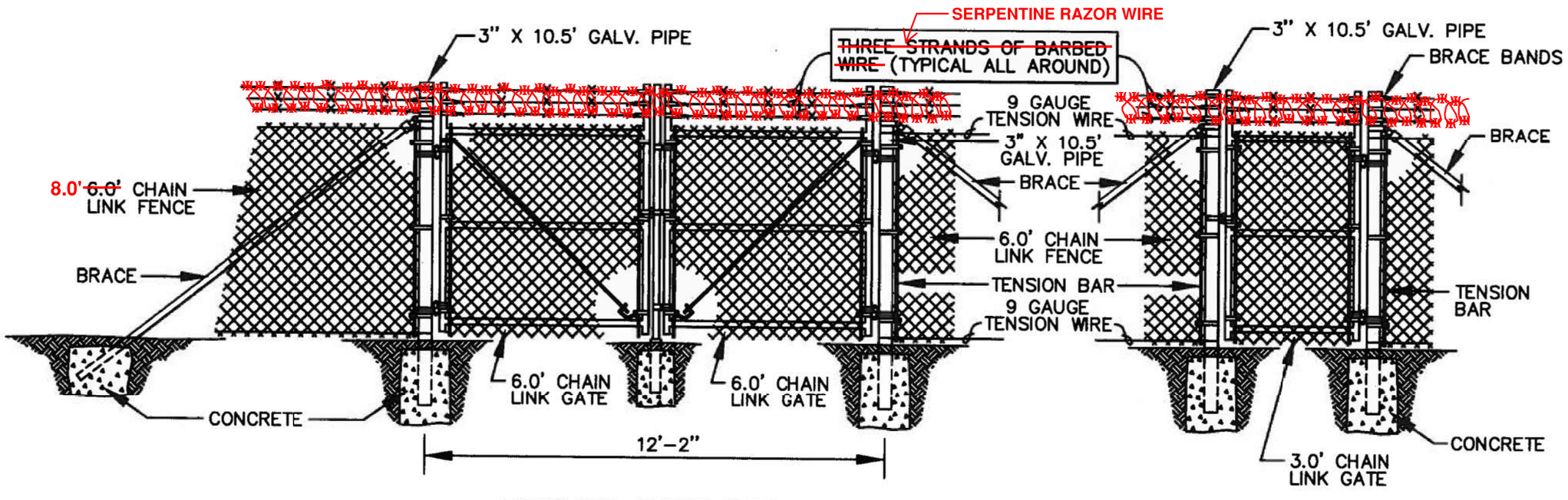
REVISION	DATE	BRIEF	BY

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
PUBLIC HEALTH SERVICE
INDIAN HEALTH SERVICE
NAVAJO NATION

STANDARD DRAWING No. W-33
HDPE WASH CROSSING DETAIL FOR 4" THRU 12" PIPE

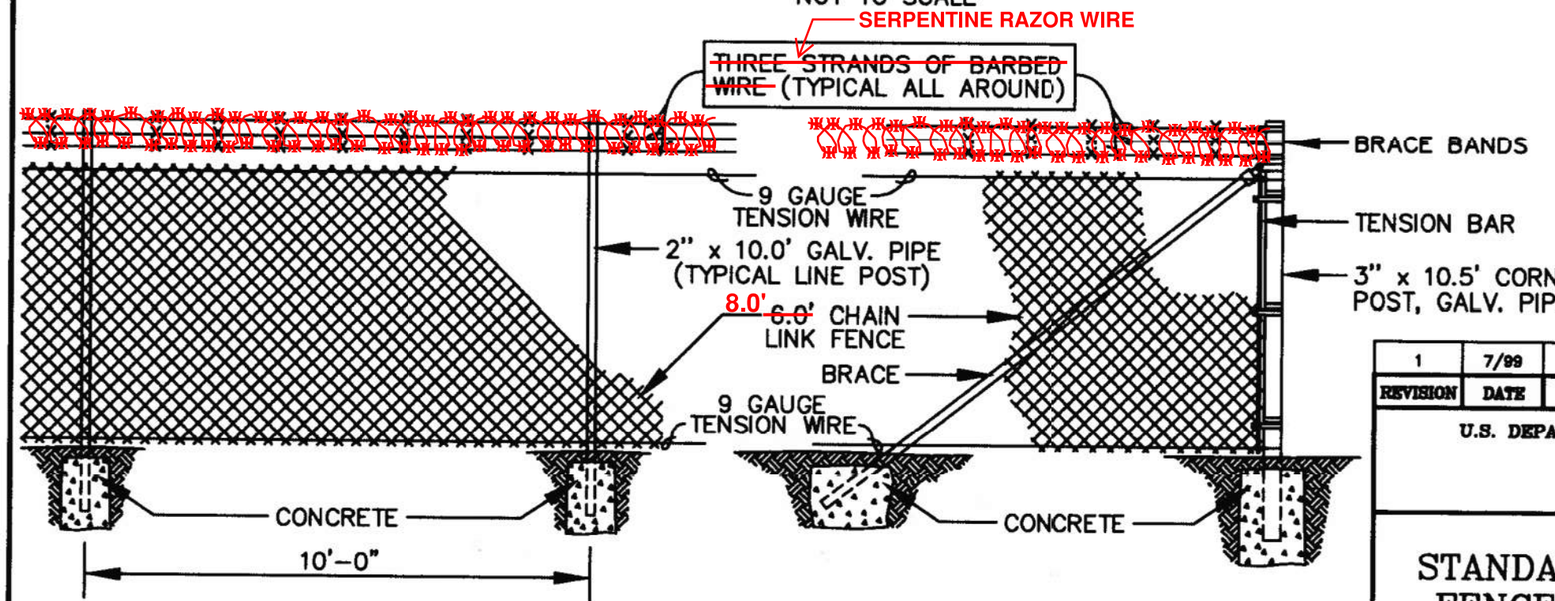
NAVAJO ENGINEERING & CONSTRUCTION AUTHORITY

DRAWN BY: WZS	CHECKED BY: S.C.	APPR. BY: S.C.	AUTOCAD
DATE: 8/24/16	DATE: 8/24/16	DATE: 8/24/16	DRAWING



DOUBLE GATE DETAIL
NOT TO SCALE

SINGLE GATE DETAIL
NOT TO SCALE



LINE POST DETAIL
NOT TO SCALE

CORNER POST DETAIL
NOT TO SCALE

1	7/99	STANDARDIZED	B.M.
REVISION	DATE	BRIEF	BY

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
PUBLIC HEALTH SERVICE
INDIAN HEALTH SERVICE
NAVAJO NATION

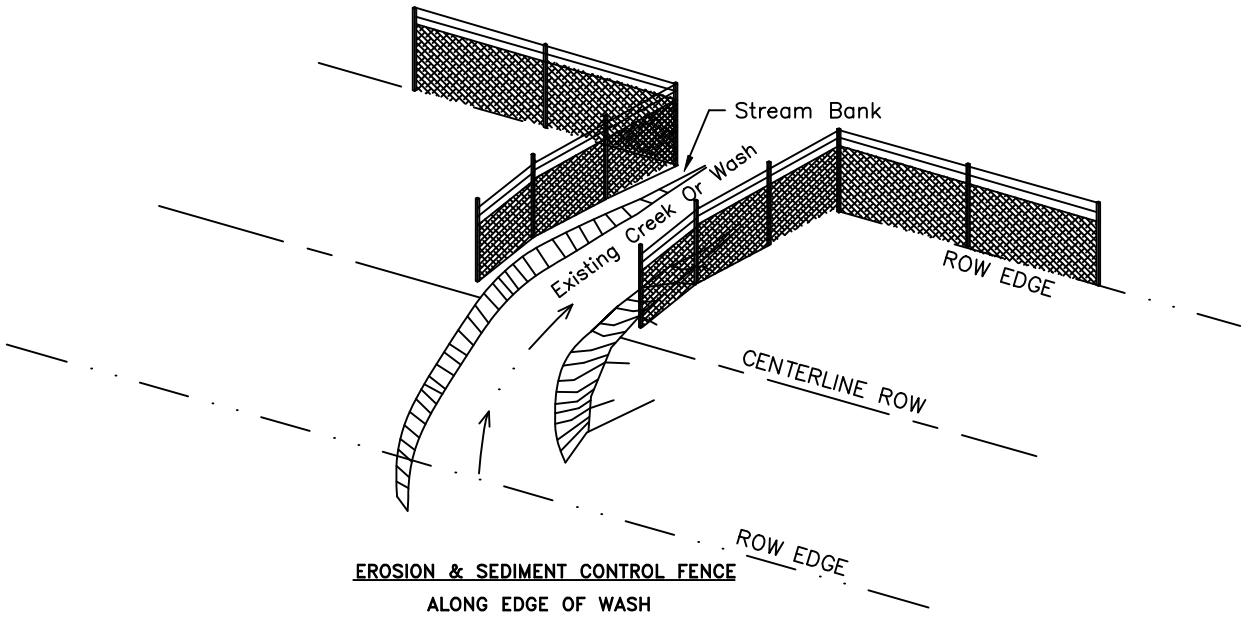
NAVAJO NATION,

STANDARD DRAWING NO. W-34
FENCE DETAIL FOR STORAGE TANK & PUMPHOUSE

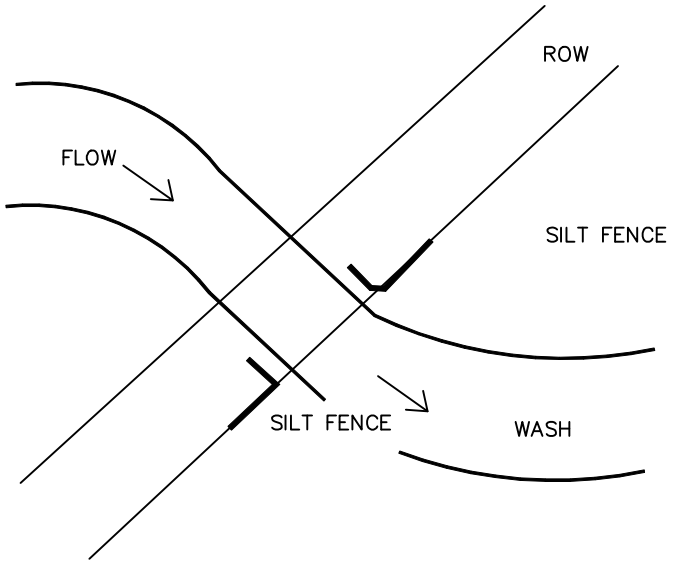
OFFICE OF ENVIRONMENTAL HEALTH AND ENGINEERING
NAVAJO AREA OFFICE, WINDOW ROCK, ARIZONA

DRAWN BY: L.S. DATE: 12/98	CHECKED BY: P.S. DATE: 12/98	APPR. BY: P.S. DATE: 12/98	AUTOCAD DRAWING

SILT FENCE DETAILS



EROSION & SEDIMENT CONTROL FENCE
ALONG EDGE OF WASH



SILT FENCE:
PLAN VIEW

INSTALLATION NOTES

1. THE SILT FENCING CONSISTS OF 3' SEDIMENT CONTROL FABRIC CLOTH WITH BURIED–TOE AND WOODEN OR STEEL POSTS (TEE OR U TYPE) 10' AND SHALL COMPLY WITH AASHTO M–288.

2. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVERLAPPED BY 6" AND FOLDED. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN "BULGES" DEVELOP IN THE SILT FENCE.

REVISION	DATE	BRIEF	BY

DEPARTMENT OF HEALTH AND HUMAN SERVICES
U.S. PUBLIC HEATH SERVICE
INDIAN HEALTH SERVICE
NAVAJO NATION

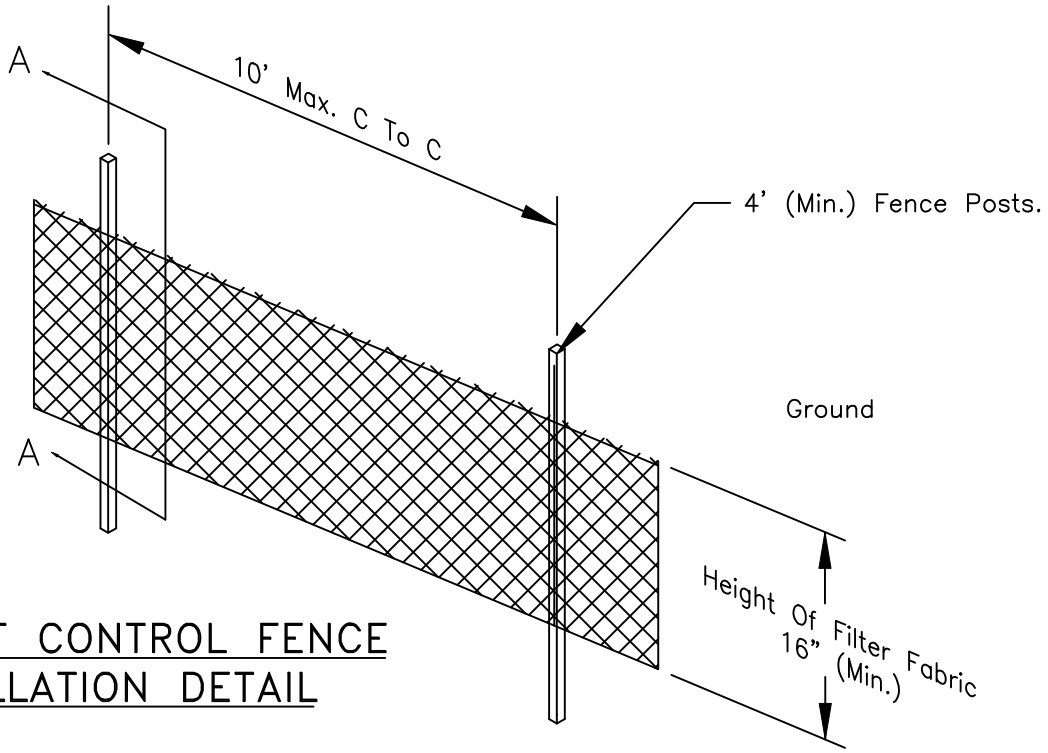
NAVAJO NATION

STANDARD DRAWING NO. W–39
SILT FENCE
DRAWING 1 OF 2

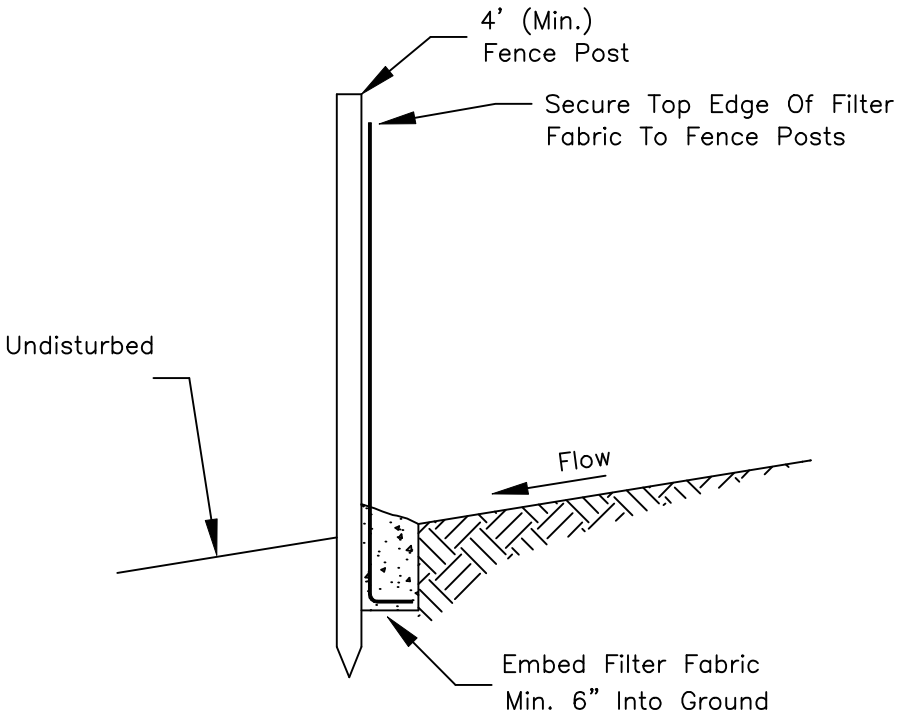
PUBLIC LAW 86–121

OFFICE OF ENVIRONMENTAL HEALTH AND ENGINEERING
NAVAJO AREA OFFICE, WINDOW ROCK, ARIZONA

DRAWN BY: TL DATE: 9/01	CHECKED BY: RG DATE: 9/01	APPR. BY: BM DATE: 9/01	AUTOCAD DRAWING



SEDIMENT CONTROL FENCE INSTALLATION DETAIL



SECTION A–A

REVISION	DATE	BRIEF	BY

DEPARTMENT OF HEALTH AND HUMAN SERVICES
U.S. PUBLIC HEATH SERVICE
INDIAN HEALTH SERVICE
NAVAJO NATION

NAVAJO NATION

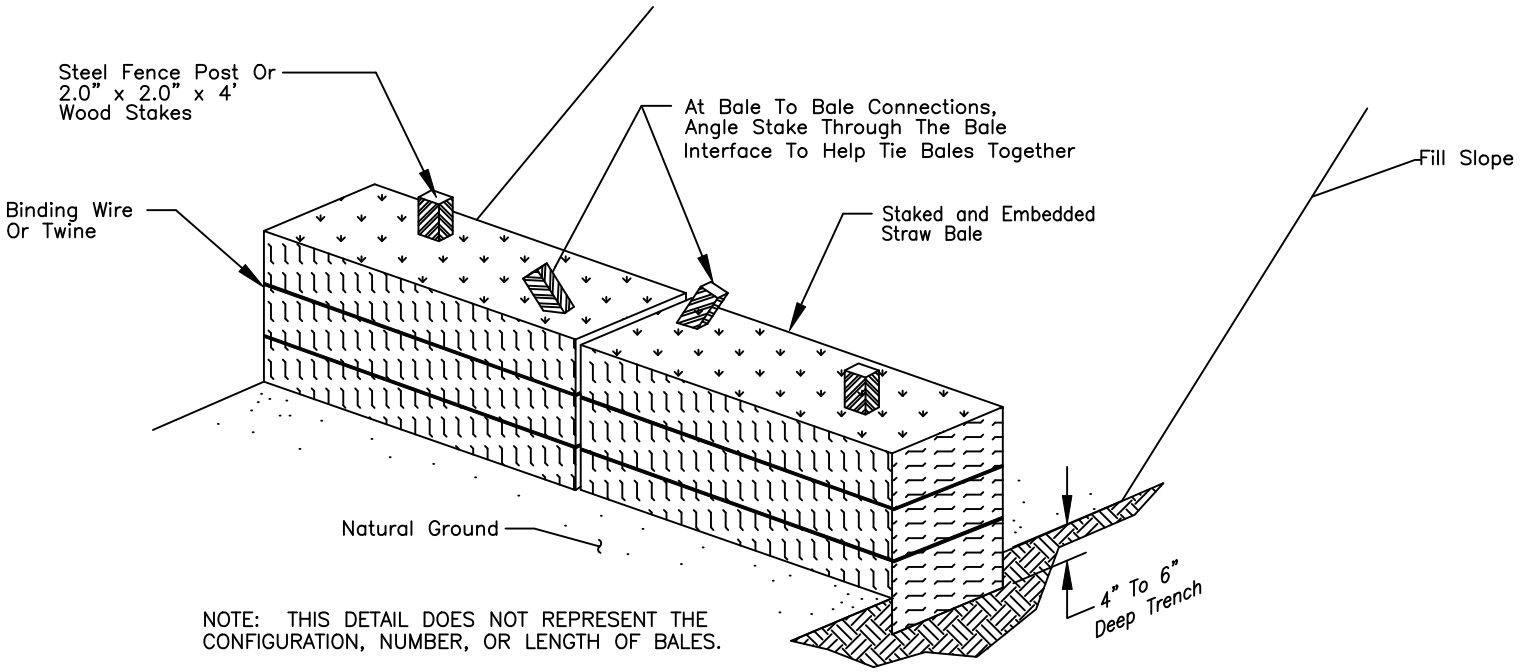
STANDARD DRAWING NO. W-39
SILT FENCE
DRAWING 2 OF 2

PUBLIC LAW 86-121

OFFICE OF ENVIRONMENTAL HEALTH AND ENGINEERING
NAVAJO AREA OFFICE, WINDOW ROCK, ARIZONA

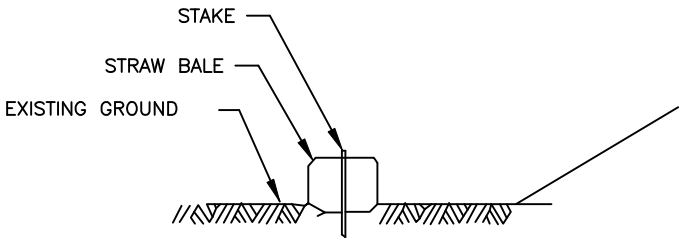
DRAWN BY: TL DATE: 9/01	CHECKED BY: RG DATE: 9/01	APPR. BY: BM DATE: 9/01	AUTOCAD DRAWING

STRAW BALE DETAILS
(For Check Dams to Retain Water and Sediment)

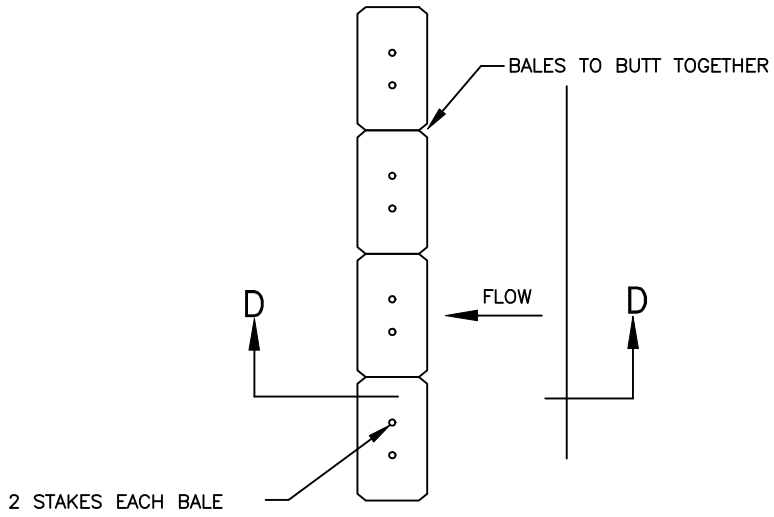


NOTE: THIS DETAIL DOES NOT REPRESENT THE CONFIGURATION, NUMBER, OR LENGTH OF BALES.

TYPICAL STRAW BALE STAKING AND TRENCHING DETAIL



SECTION D–D



PLAN
STRAW BALE SILT BARRIER

INSTALLATION NOTES

1. STRAW BALES MAY BE USED FOR DIKES PROVIDED THEY ARE PROPERLY ANCHORED WITH STEEL FENCE POSTS OR 2" X 2" X 4' WOOD STAKES (TWO PER BALE) ANCHORED 1.5' INTO THE NATURAL GROUND. STRAW BALES SHALL BE CERTIFIED 0.5% WEED FREE. DO NOT USE STRAW BALES IN AREAS OF CONCENTRATED FLOW AND CUT DITCHES.

GENERAL NOTES

1. THE CONTRACTOR SHALL HAVE ON–SITE A COPY OF THE STORM WATER POLLUTION PREVENTION PLAN (SWPPP) WITH PROJECT SPECIFIC COVER SHEET.

2. CONSTRUCT CHECK DAMS AND/OR FILTERS IN STRATEGIC LOCATIONS ON THE PROJECT TO FILTER STORM RUNOFF BEFORE IT LEAVES THE PROJECT CONSTRUCTION LIMITS OR ENTERS A WASH. SEE PROJECT CONSTRUCTION PLANS FOR LOCATIONS OF CHECK DAMS & FILTERS.

3. CLEAN ALL SEDIMENT BASIN AND TRAPS OF ACCUMULATED SEDIMENT WHEN HALF FULL OF SEDIMENT.

4. THE CONTRACTOR SHALL INSPECT AND MAINTAIN ALL SWPPP MEASURES MONTHLY AND AFTER EACH SIGNIFICANT STORM EVENT (I.E. 0.5 IN. OF MOISTURE IN 24 HOURS).

5. THE CONTRACTOR, IN CONSULTATION WITH THE PROJECT ENGINEER SHALL ADJUST THE DIMENSIONS AND/OR LOCATIONS OF TEMPORARY SEDIMENT AND EROSION CONTROL DEVICES TO FIT ACTUAL FIELD CONDITIONS. ALL ADJUSTMENTS WILL BE DOCUMENTED ON THE INSPECTION FORMS INCLUDED WITH THE SWPPP.

6. REMOVE AND DISPOSE OF EROSION CONTROL MEASURES WHEN THE PERMANENT EROSION CONTROL MEASURES ARE SATISFACTORILY ESTABLISHED.

REVISION	DATE	BRIEF	BY

DEPARTMENT OF HEALTH AND HUMAN SERVICES
U.S. PUBLIC HEATH SERVICE
INDIAN HEALTH SERVICE
NAVAJO NATION

NAVAJO NATION

STANDARD DRAWING NO. W–40
STRAW BALES

PUBLIC LAW 86–121

OFFICE OF ENVIRONMENTAL HEALTH AND ENGINEERING
NAVAJO AREA OFFICE, WINDOW ROCK, ARIZONA

DRAWN BY: TL DATE: 9/01	CHECKED BY: RG DATE: 9/01	APPR. BY: BM DATE: 9/01	AUTOCAD DRAWING

NAVAJO TRIBAL UTILITY AUTHORITY
CONTROL PANEL LAYOUT

SCHEDULE OF DRAWINGS

PAGE	FILENAME	TITLE	NOTES
1	AC_CV	COVERSHEET	SHEDULE OF DRAWINGS
2	AC_DIO	DISCRETE I/O	WIRING
3	AC_AIO	ANALOG I/O	WIRING
4	AC_PWR	POWER DISTRIBUTION	WIRING
5	AC_BP	BACKPLANE LAYOUT	BP W/ BOM
6	AC_CBL	COMM CABLES PINOUT	WIRING

AC TANK CONTROL PANEL

NO.	DATE	DESCRIPTION	BY

NAVAJO TRIBAL UTILITY AUTHORITY

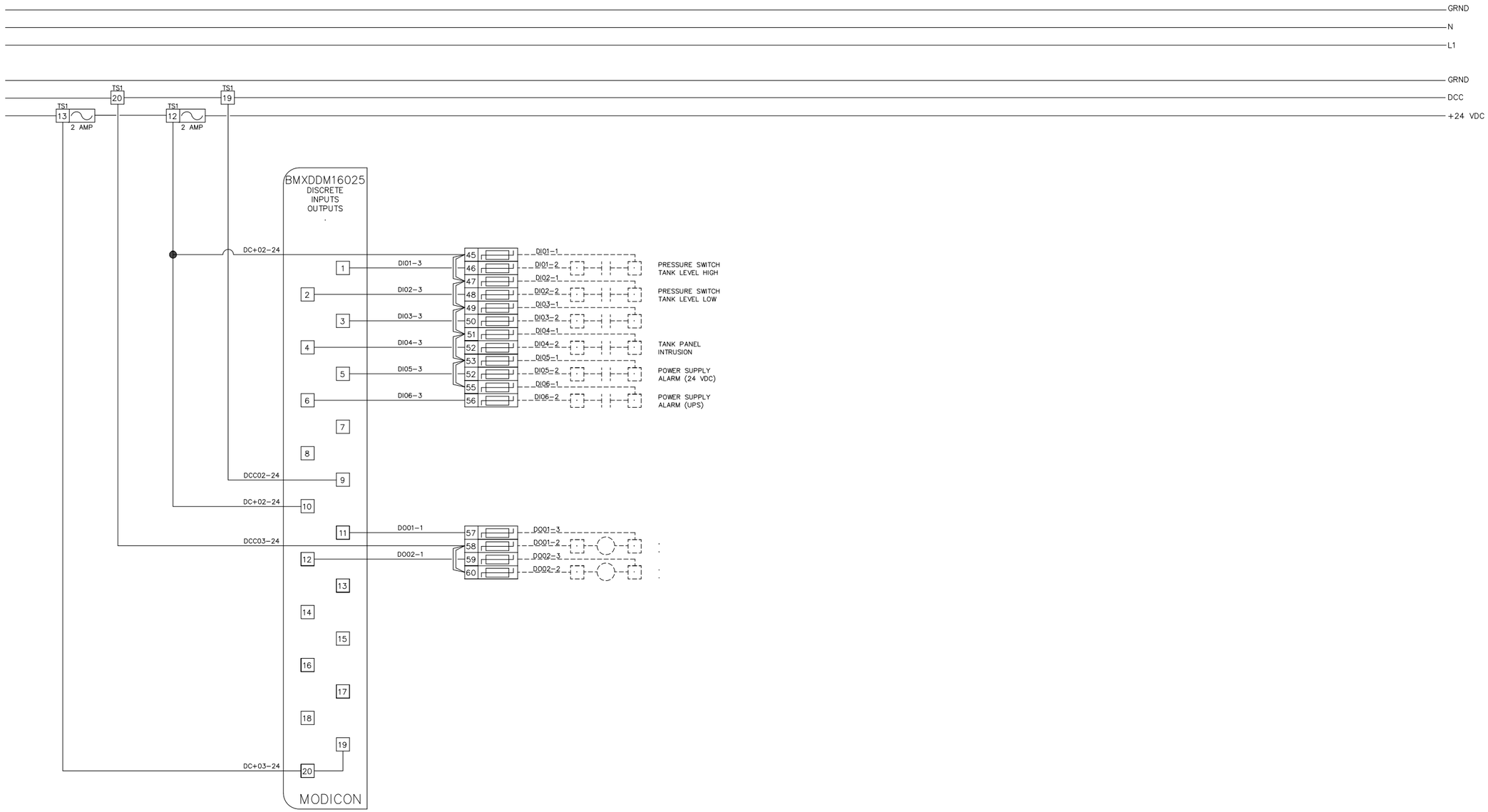
SCALE: NONE	REVISIONS	BY	DATE
DATE: .			
DR'N. / CKD.			
AP'VD.			

TITLE: AC TANK PANEL
COVER SHEET

W.O.#

SHEET 1 OF 6

POWER DISTRIBUTION THIS PAGE REFLECTS "LOGICAL" SCHEMATIC SEE "DC DISTRIBUTION" DRAWING AND "AC DISTRIBUTION" DRAWING FOR POINT TO POINT TERMINATIONS



LEGEND

Field Terminations ----------

Panel Wiring _____

NO.	DATE	DESCRIPTION	BY
01	3/19	DWG UPDATES	NTUA

NAVAJO TRIBAL UTILITY AUTHORITY

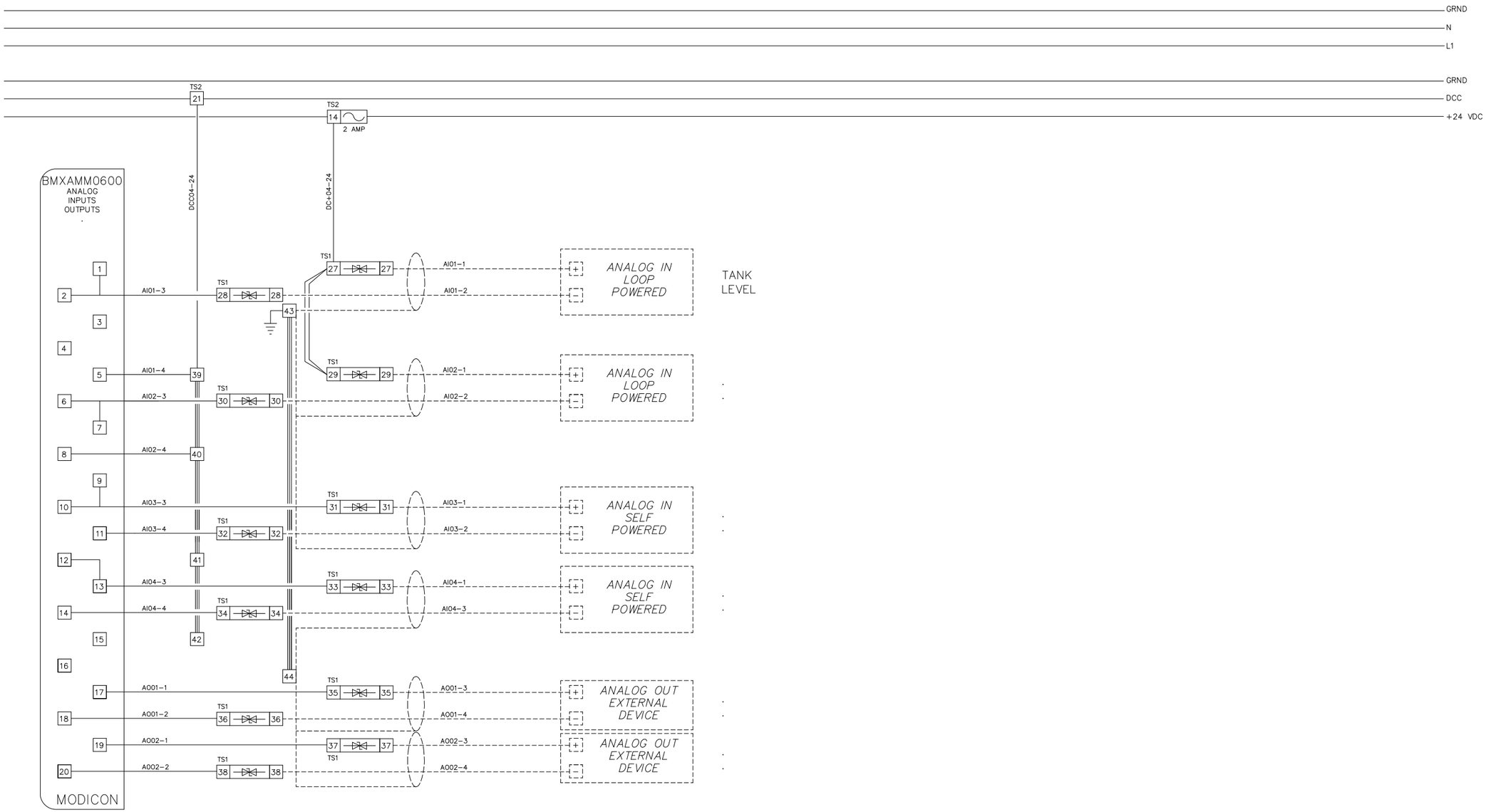
SCALE: NONE	REVISIONS	BY	DATE
DATE: .	.	.	.
DRN. . CKD. .	.	.	.
APV'D. .	.		

TITLE: AC TANK CONTROL PANEL
DISCRETE I/O

W.O.#

SHEET 2 OF 6

POWER DISTRIBUTION THIS PAGE REFLECTS "LOGICAL" SCHEMATIC SEE "DC DISTRIBUTION" DRAWING AND "AC DISTRIBUTION" DRAWING FOR POINT TO POINT TERMINATIONS



LEGEND	
Field Terminations	----------
Panel Wiring	_____

NO.	DATE	DESCRIPTION	BY
01	3/19	DWG UPDATES	NTUA

NAVAJO TRIBAL UTILITY AUTHORITY

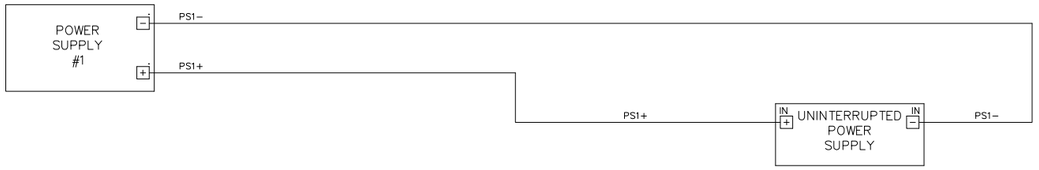
SCALE: NONE	REVISIONS	BY	DATE
DATE: .	.	.	.
DRN. . CKD. .	.	.	.
APV'D. .			

TITLE: AC TANK CONTROL PANEL
ANALOG I/O

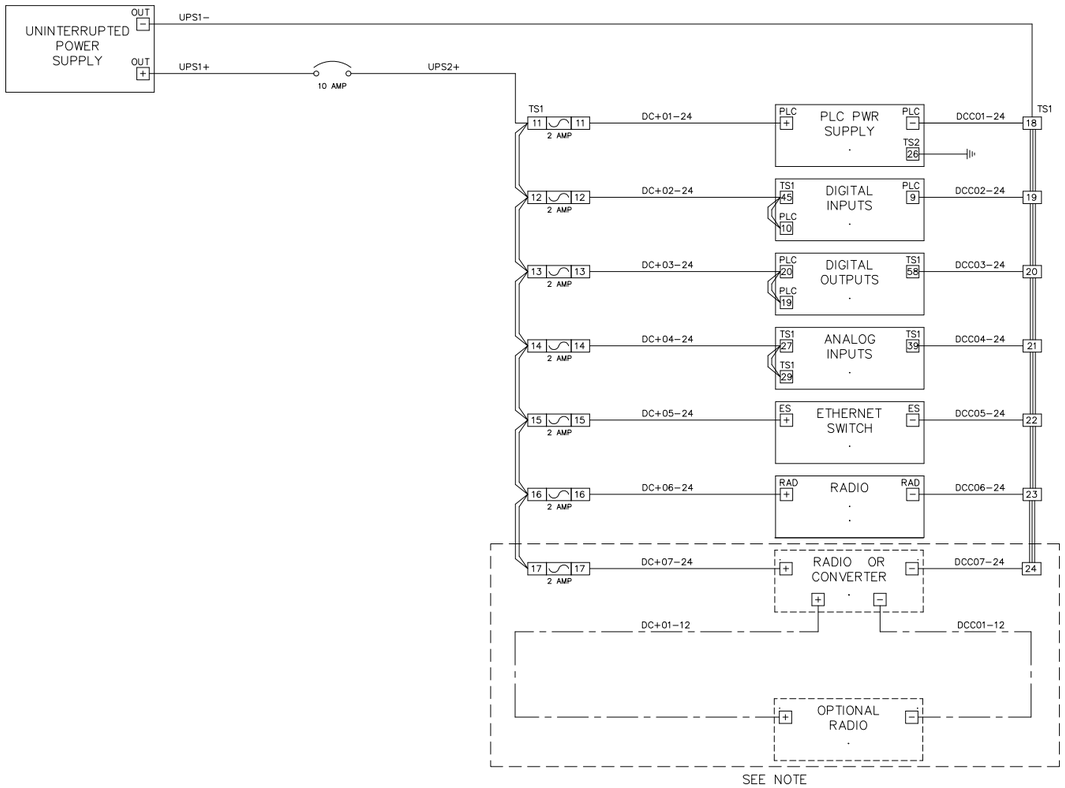
W.O.#

SHEET 3 OF 6

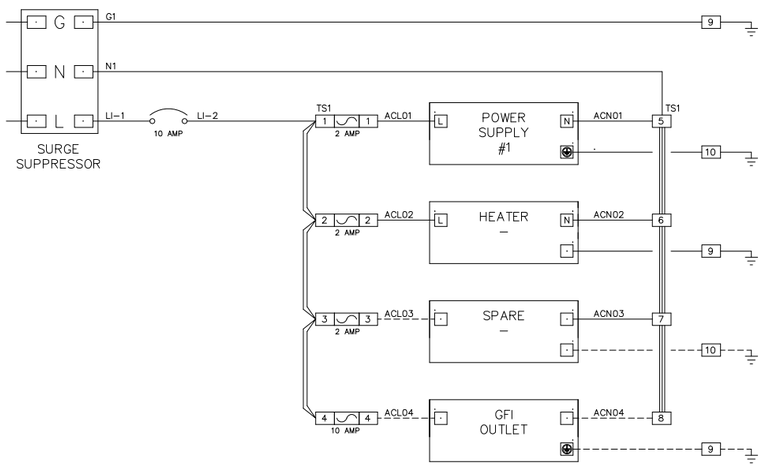
24VDC DISTRIBUTION



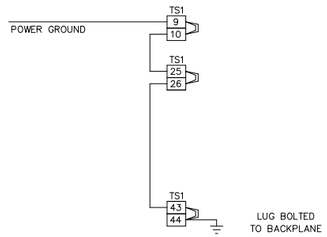
24VDC DISTRIBUTION (UPS)



120VAC DISTRIBUTION



GRND



NOTE: SEE OPTIONS BELOW IF ADDITIONAL RADIO IS REQUIRED, IMPLEMENT ONE OF THE TWO OPTIONS BELOW. OTHERWISE, THIS AREA CAN BE LEFT VACANT FOR ANY FUTURE POWER REQUIREMENTS:

OPTION #1; WHEN INSTALLING A 24 VDC RADIO, WIRE RADIO DIRECTLY TO TERMINALS 17 & 24 ON TS1.
OPTION #2; WHEN INSTALLING A 12−13.8 VDC RADIO, INSTALL DC/DC CONVERTER POWERED BY TERMINALS 17 & 24 ON TS1, THEN WIRE RADIO DIRECTLY TO THE DC/DC CONVERTER.

LEGEND

Field Terminations ----------

Panel Wiring _____

NO.	DATE	DESCRIPTION	BY
01	3/19	DWG UPDATES	NTUA

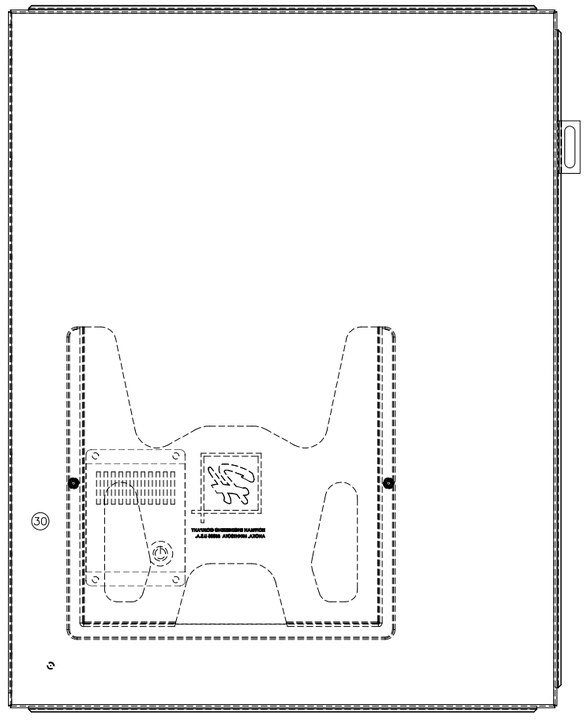
NAVAJO TRIBAL UTILITY AUTHORITY

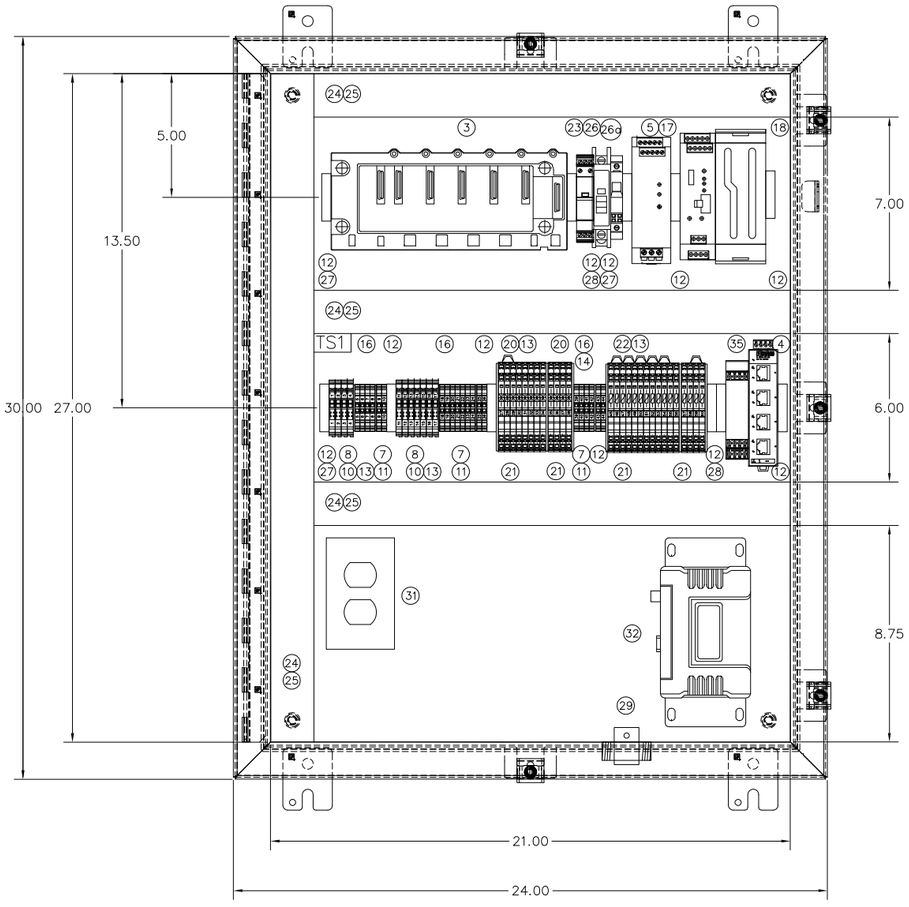
SCALE: .	REVISIONS	BY	DATE
DATE: .	.	.	.
DRN. . CKD. .	.	.	.
APVD. .			

TITLE AC TANK CONTROL PANEL
POWER DISTRIBUTION

W.O.#

SHEET 4 OF 6





BILL OF MATERIALS

ITEM	QTY	PART NO.	DESCRIPTION	MFG
1	1	A30H24DLP	SINGLE–DOOR TYPE 4 ENCLOSURE	HOFFMAN
2	1	A30P24	BACKPLANE	HOFFMAN
3*	.	M340	MODICON M340 BOM	SCHNEIDER ELECTRIC
3a	1	BMXXBM0400	4–SLOT RACK MODULE	SCHNEIDER ELECTRIC
3b	1	BMXCPS3020	POWER SUPPLY MODULE	SCHNEIDER ELECTRIC
3c	1	BMXP342020	CPU PROCESSOR MODULE	SCHNEIDER ELECTRIC
3d	1	BMXDDM16025	DIGITAL INPUT/OUTPUT MODULE	SCHNEIDER ELECTRIC
3e	1	BMXAMM0600	ANALOG INPUT/OUTPUT MODULE	SCHNEIDER ELECTRIC
3f	2	BMXFTB2010	REMOVABLE CONNECTION BLOCK – SCREW CLAMP	SCHNEIDER ELECTRIC
3g*	1	BMXNOM0200	SERIAL LINK MODULE	SCHNEIDER ELECTRIC
4	1	FL SWITCH SFN 5TX	INDUSTRIAL ETHERNET SWITCH	PHOENIX CONTACT
5	1	QUINT4–PS/1AC/ 24DC/5	POWER SUPPLY 22.5–28.5V ADJUSTABLE	PHOENIX CONTACT
6	.	.	.	.
7	14	UT2,5	UT2,5 TERMINALS	PHOENIX CONTACT
8	10	UT4TG	FUSE TERMINAL BASE	PHOENIX CONTACT
9	7	P–FU5X20LED24	FUSE PLUG	PHOENIX CONTACT
10	4	P–FU5X20LA250	FUSE PLUG	PHOENIX CONTACT
11	6	UT2,5PE	GROUNDING TERMINAL	PHOENIX CONTACT
12	15	E/NS35N	END CLAMP	PHOENIX CONTACT
13	3	FBS 20–6 BU #3032208	FIXED BRIDGE	PHOENIX CONTACT
14	3	FBS 20–5 BU #3036929	INSERTION BRIDGE	PHOENIX CONTACT
15	8	D–UT2,5/10	END COVER	PHOENIX CONTACT
16	4	ATP–UT	PARTITION PLATES	PHOENIX CONTACT
17	2	QUINT4–UPS/24DC /24DC/10	UNINTERRUPTIBLE POWER SUPPLY	PHOENIX CONTACT
18	2	UPS–BAT/VRLA/ 24DC/1.3AH	ENERGY STORAGE	PHOENIX CONTACT
19	.	.	.	PHOENIX CONTACT
20	12	TTC–6–TVSD–C–24DC–UT–I	SURGE PROTECTION #2906831	PHOENIX CONTACT
21	6	TTC–6–LCP #2908729	END COVER	PHOENIX CONTACT
22	16	TTC–6–MOV–C–24DC–UT–I	SURGE PROTECTION # 2906837	PHOENIX CONTACT
23	1	PLT–SEC–T3–120 –FM #2905228	TYPE 3 SURGE PROTECTION DEVICE	PHOENIX CONTACT
24	AN	F2X4LG6	TYPE F NARROW SLOT WIRING DUCT	PANDUIT
25	AN	C2LG6	WIRING DUCT COVER	PANDUIT
26	1	TMC 61C 10A #0902072	CIRCUIT BREAKER	PHOENIX CONTACT
26a	1	UT6–TMCM 10A #0916610	CIRCUIT BREAKER	PHOENIX CONTACT
27	AN	1492DR6	EXTENDED DIN RAIL	ALLEN BRADLEY
28	AN	1492–DR5	DIN RAIL	ALLEN BRADLEY
29	1	IS–50NX–C2	LIGHTNING ARRESTER	POLYPHASER
30	1	D–AH1001A	HEATER 100W 115V .9A	HOFFMAN
31	1	DRUBGFI15	DIN RAIL UTILITY BOX	HUBBELL
32	1	ORBIT OR TRANSNET	902 – 928 MHz RADIO SPREAD SPECTRUM	GEMDS
33	1	CAT6	CABLE – PLC TO HMI	BELDEN
34*	1	.	CABLE – PLC TO MODEM (TO LENGTH)	.
35*	1	MINI–PS–12–24 DC/5–15/2	DC/DC CONVERTER	PHOENIX CONTACT

AN – As needed
3* – BOM – To include items 3a–3g.
3g* – Include in the event item 35* is required.
34* – Include (1) additional in the event item 33* is required.
35* – Include in the event a 13.8 VDC radio is required.

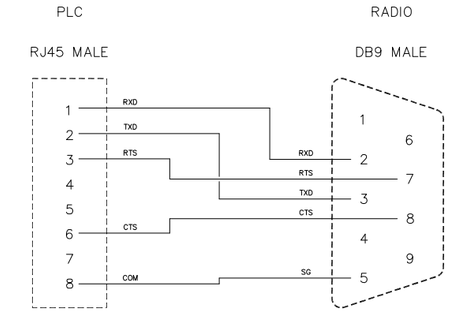
NO.	DATE	DESCRIPTION	BY
01	3/19	DWG UPDATES	NTUA

NAVAJO TRIBAL UTILITY AUTHORITY

SCALE: NONE	REVISIONS	BY	DATE
DATE: .	.	.	.
DRN. . CKD. .	.	.	.
APVD. .			

TITLE: AC TANK CONTROL PANEL
BACKPLANE

W.O.#



A CABLE DIAGRAM: PLC TO RADIO

NO.	DATE	DESCRIPTION	BY
01	3/19	DWG UPDATES	NTUA

NAVAJO TRIBAL UTILITY AUTHORITY

SCALE: NONE	REVISIONS	BY	DATE
DATE: .	.	.	.
DR'N. . CKD. .	.	.	.
APV'D. .			

TITLE AC TANK CONTROL PANEL
CABLE PINOUT

W.O.#

SHEET 6 OF 6

NAVAJO TRIBAL UTILITY AUTHORITY
PUMP CONTROL PANEL LAYOUT

SCHEDULE OF DRAWINGS			
SHEET	FILENAME	TITLE	NOTES
1	PLC_CV	COVERSHEET	SHEDULE OF DRAWINGS
2	PLC_DIO	DISCRETE I/O	WIRING
3	PLC_AI	ANALOG INPUT	WIRING
3A	PLC_AO	ANALOG OUTPUT	WIRING
4	PLC_PWR	POWER DISTRIBUTION	WIRING
5	PLC_BP	BACKPLANE LAYOUT	BP W/ BOM
5A	PLC_SOP	SWING OUT PANEL	BP W/ BOM
6	PLC_CBL	COMM CABLES PINOUT	

PLC CONTROL PANEL

NO.	DATE	DESCRIPTION	BY
01	3/22	DWG MODIFICATION "DILKON PASS BOOSTER"	NTUA

NAVAJO TRIBAL UTILITY AUTHORITY

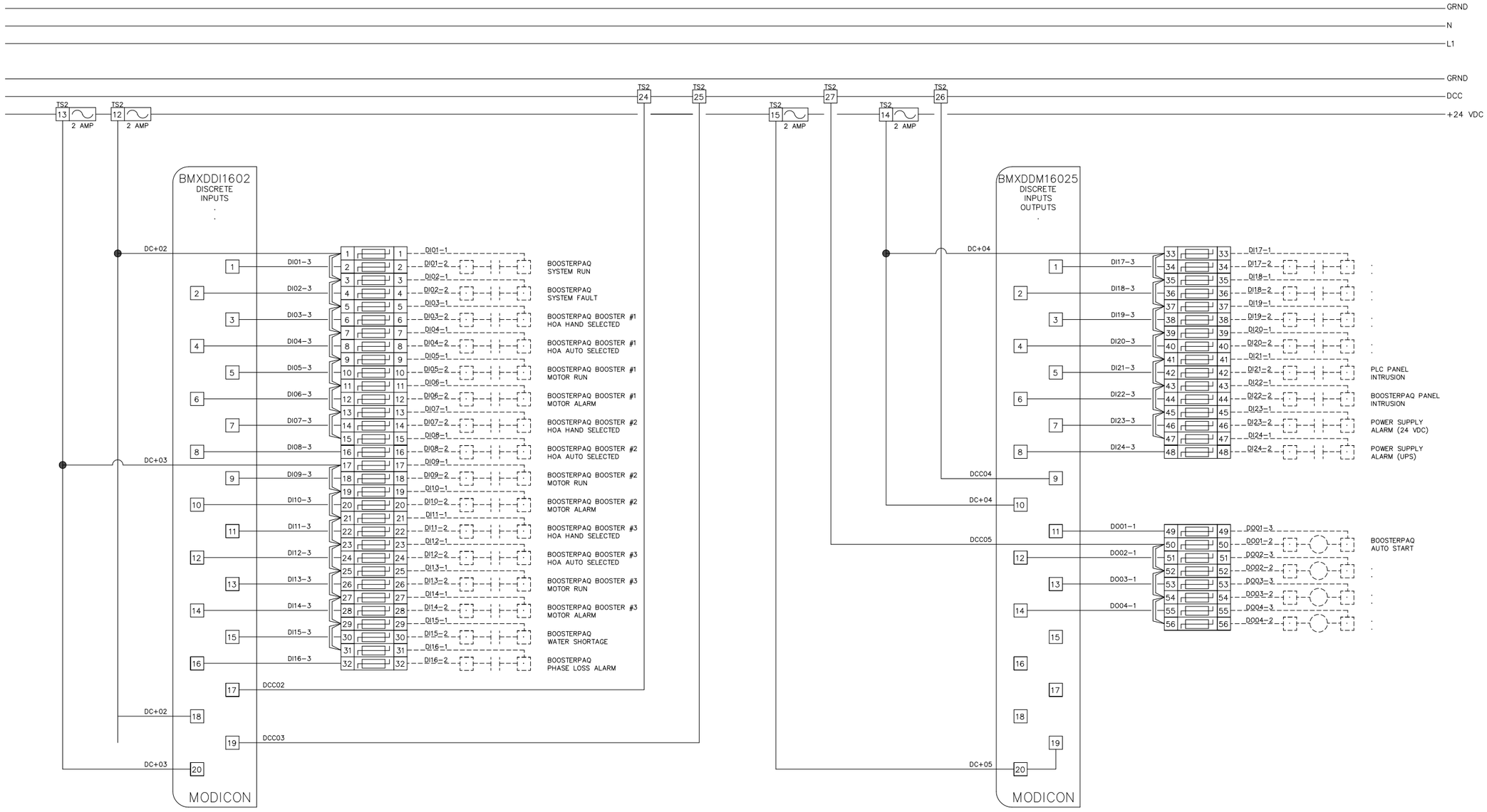
SCALE: NONE	REVISIONS	BY	DATE
DATE: .	.	.	.
DR'N: . CKD. .	.	.	.
APP'VD. .			

TITLE: PLC CONTROL PANEL
COVER SHEET

W.O.#

SHEET 1 OF 6

POWER DISTRIBUTION THIS PAGE REFLECTS "LOGICAL" SCHEMATIC SEE "DC DISTRIBUTION" DRAWING AND "AC DISTRIBUTION" DRAWING FOR POINT TO POINT TERMINATIONS



LEGEND

Field Terminations ----------

Panel Wiring ——————

NO.	DATE	DESCRIPTION	BY
02	12/21	DWG UPDATES "DILKON PASS BOOSTER"	NTUA
01	3/19	DWG UPDATES	NTUA

NAVAJO TRIBAL UTILITY AUTHORITY

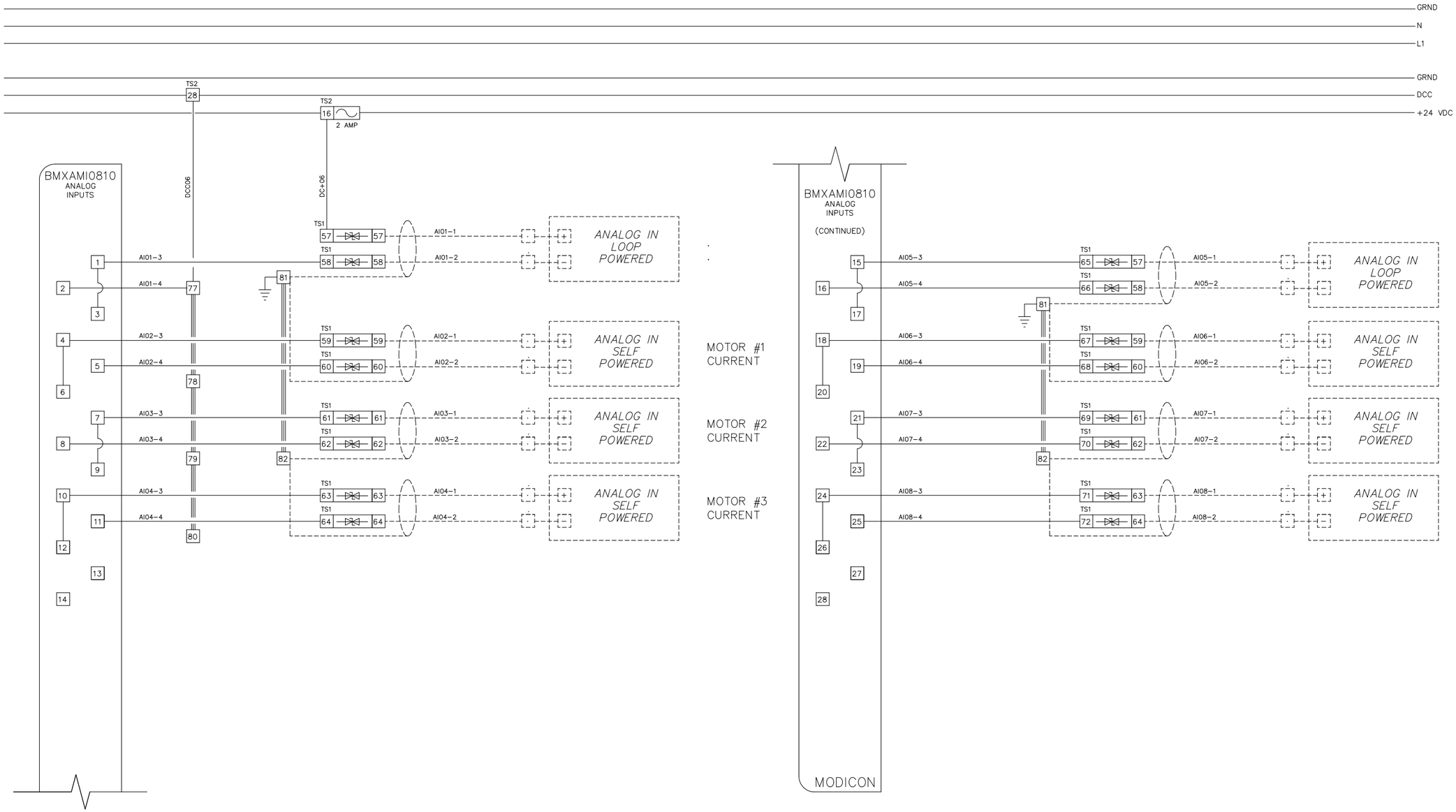
SCALE: NONE
DATE:
DRN. CKD.
APVD.
REVISIONS BY DATE

TITLE: PLC CONTROL PANEL DISCRETE I/O (BOOSTER WITH BOOSTERPAQ)

W.O.#

SHEET 2 OF 6

POWER DISTRIBUTION THIS PAGE REFLECTS "LOGICAL" SCHEMATIC SEE "DC DISTRIBUTION" DRAWING AND "AC DISTRIBUTION" DRAWING FOR POINT TO POINT TERMINATIONS



LEGEND

Field Terminations ----------

Panel Wiring ——————

NO.	DATE	DESCRIPTION	BY
03	3/22	DWG MODIFICATIONS "DILKON PASS BOOSTER"	NTUA
02	12/21	DWG UPDATES	NTUA
01	3/19	DWG UPDATES	NTUA

NAVAJO TRIBAL UTILITY AUTHORITY

SCALE: NONE
DATE: .
DRN. . CKD. .
APV'D. .

REVISIONS	BY	DATE
.	.	.
.	.	.

TITLE: PLC CONTROL PANEL
ANALOG INPUT
(BOOSTER WITH BOOSTERPAQ)

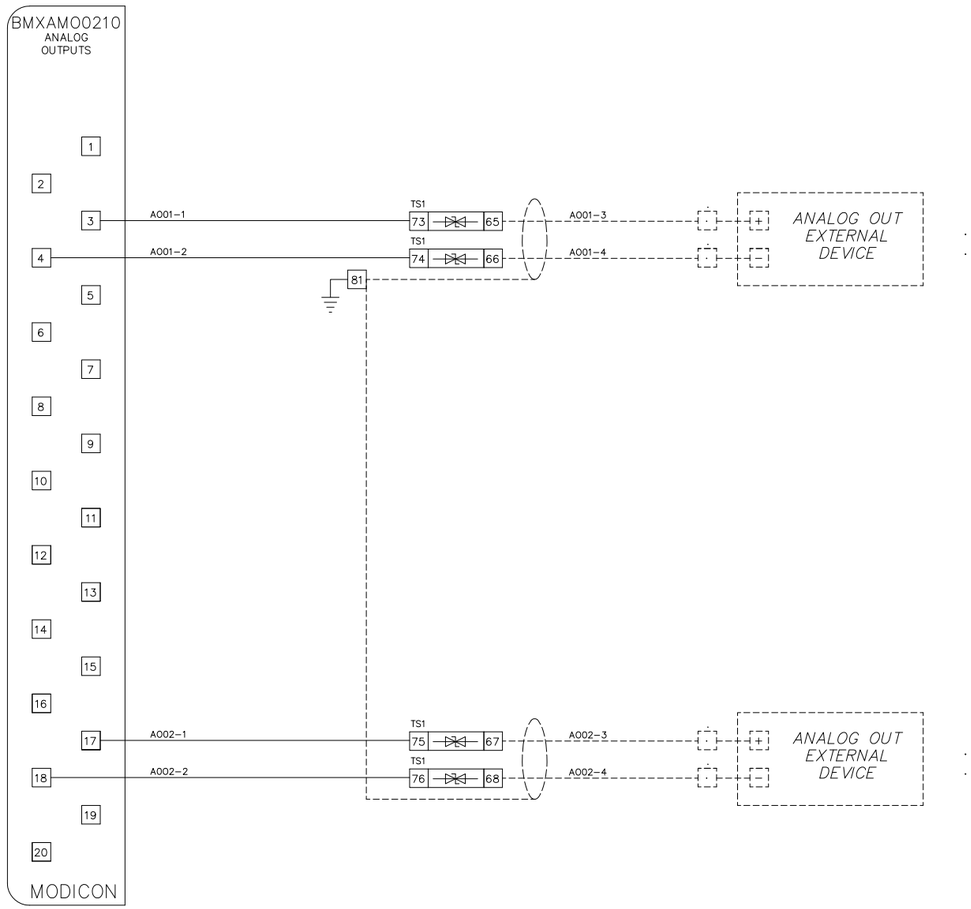
W.O.#

SHEET 3 OF 6

POWER DISTRIBUTION THIS PAGE REFLECTS "LOGICAL" SCHEMATIC SEE "DC DISTRIBUTION" DRAWING AND "AC DISTRIBUTION" DRAWING FOR POINT TO POINT TERMINATIONS

GRND
N
L1

GRND
DCC
+24 VDC



LEGEND

Field Terminations ----------

Panel Wiring _____

NO.	DATE	DESCRIPTION	BY
03	3/22	DWG MODIFICATIONS "DILKON PASS BOOSTER"	NTUA
02	12/21	DWG UPDATES	NTUA
01	3/19	DWG UPDATES	NTUA

NAVAJO TRIBAL UTILITY AUTHORITY

SCALE: NONE
DATE:
DRN.
CKD.
APV'D.

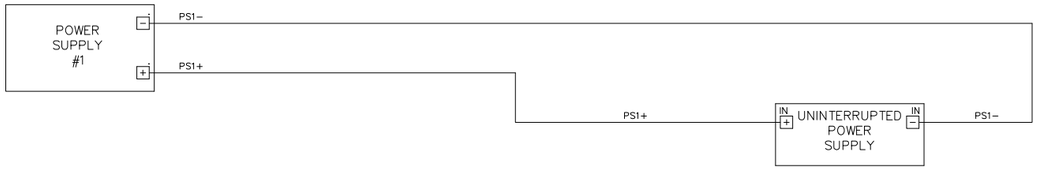
REVISIONS	BY	DATE

TITLE: PLC CONTROL PANEL
ANALOG OUTPUT
(BOOSTER WITH BOOSTERPAQ)

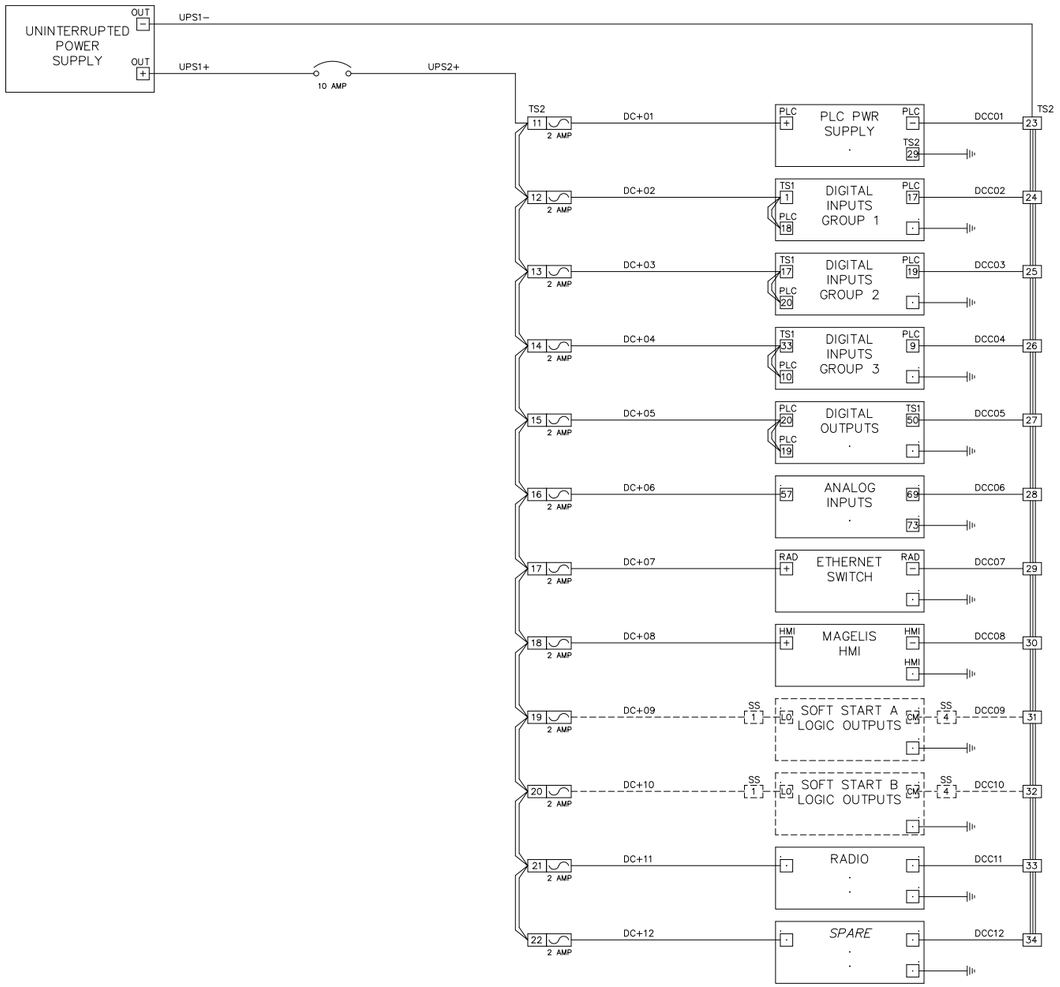
W.O.#

SHEET 3a OF 6

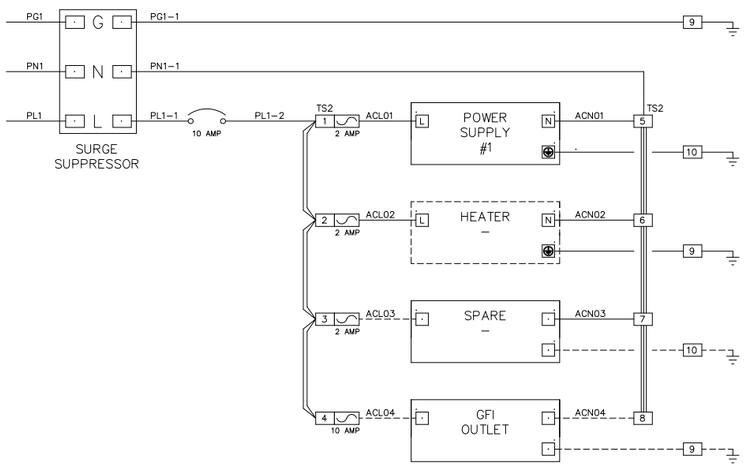
24VDC DISTRIBUTION



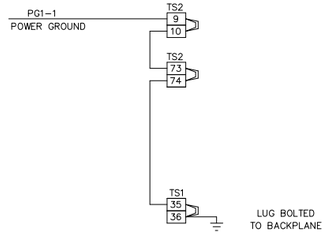
24VDC DISTRIBUTION (UPS)



120VAC DISTRIBUTION



GRND



LEGEND

Field Terminations ----------

Panel Wiring _____

NO.	DATE	DESCRIPTION	BY
01	12/16	DWG UPDATES	NTUA

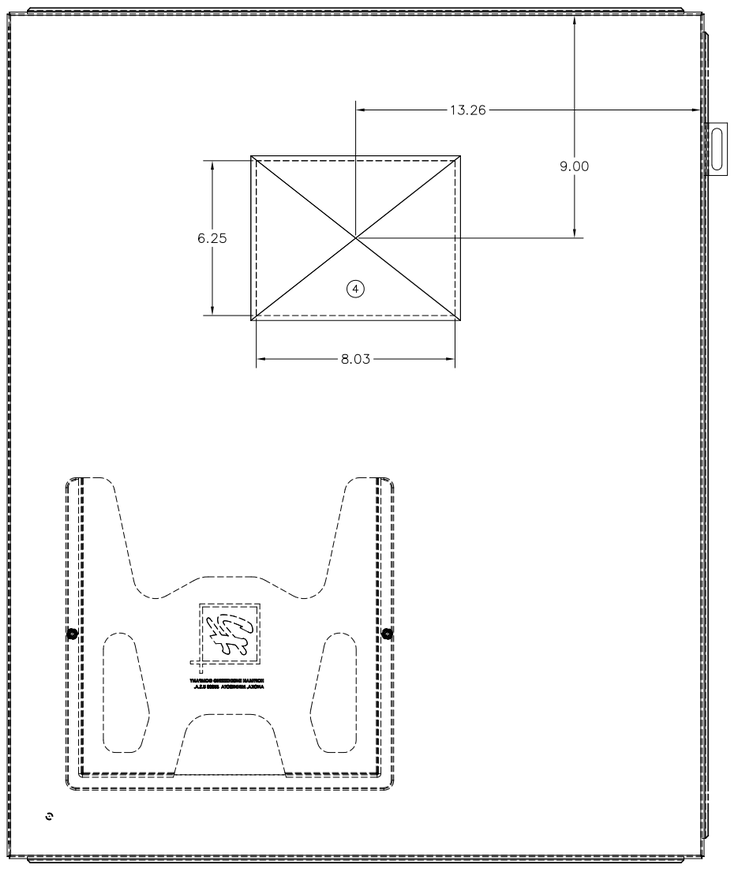
NAVAJO TRIBAL UTILITY AUTHORITY

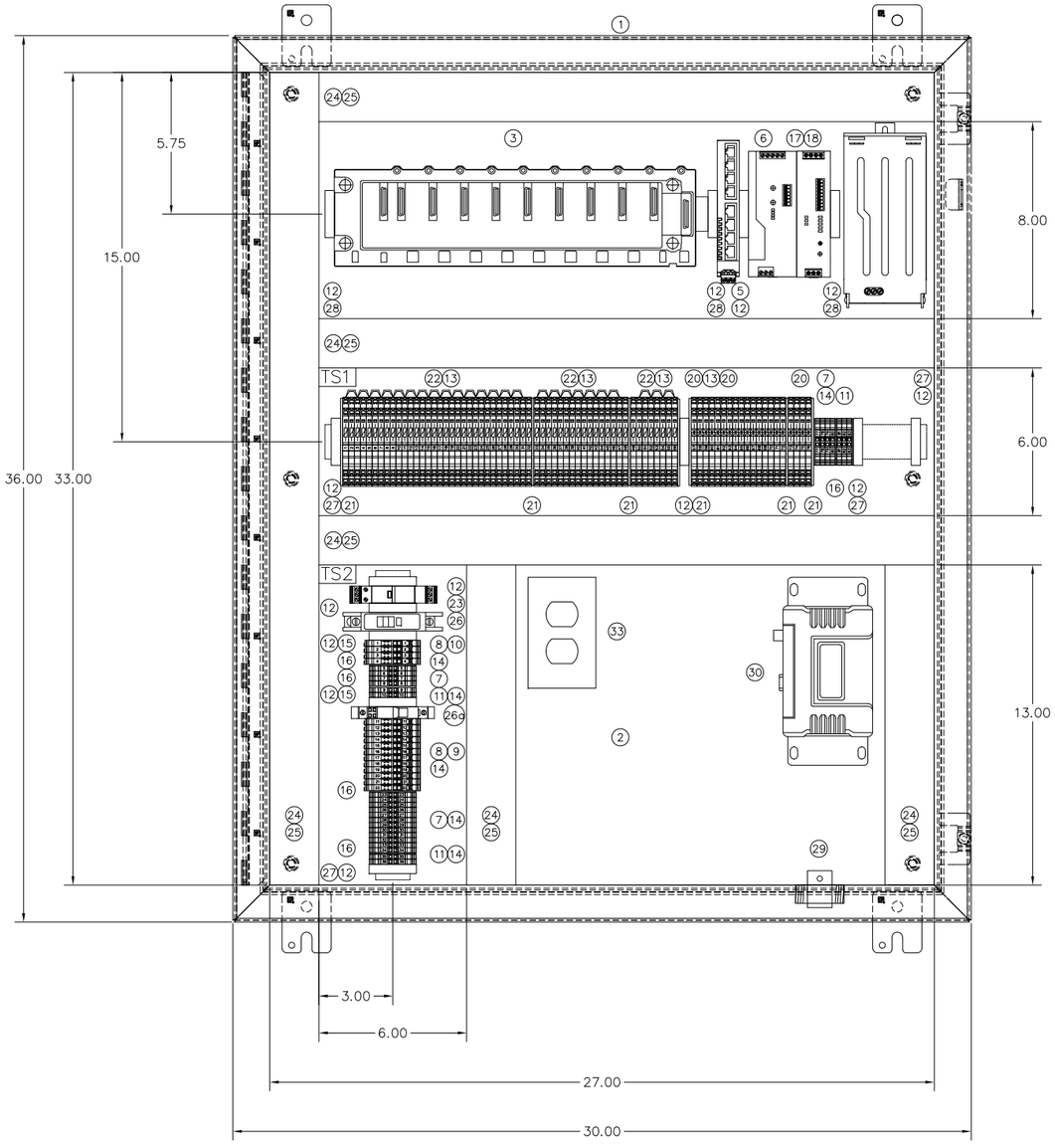
SCALE: .	REVISIONS	BY	DATE
DATE: .	.	.	.
DRN. . CKD. .	.	.	.
APVD. .			

TITLE PLC CONTROL PANEL
POWER DISTRIBUTION

W.O.#

SHEET 4 OF 6





BILL OF MATERIALS

ITEM	QTY	PART NO.	DESCRIPTION	MFG
1	1	A-363012LP	SINGLE-DOOR TYPE 12 ENCLOSURE	HOFFMAN
2	1	A-36P30	BACKPLANE	HOFFMAN
3*	.	M340	MODICON M340 BOM	SCHNEIDER ELECTRIC
3a	1	BMXXBP0800	8-SLOT RACK MODULE	SCHNEIDER ELECTRIC
3b	1	BMXCPS3020	POWER SUPPLY MODULE	SCHNEIDER ELECTRIC
3c	1	BMXP342020	CPU PROCESSOR MODULE	SCHNEIDER ELECTRIC
3d	1	BMXDDI1602	DIGITAL INPUT MODULE	SCHNEIDER ELECTRIC
3e	1	BMXDDM16025	DIGITAL INPUT/OUTPUT MODULE	SCHNEIDER ELECTRIC
3f	1	BMXAMI0810	ANALOG INPUT MODULE	SCHNEIDER ELECTRIC
3g	1	BMXAMO0210	ANALOG OUTPUT MODULE	SCHNEIDER ELECTRIC
3h	3	BMXFTB2010	REMOVABLE CONNECTION BLOCK - SCREW CLAMP	SCHNEIDER ELECTRIC
3i	1	BMXFTB2800	REMOVABLE CONNECTION BLOCK - CAGE SPRING	SCHNEIDER ELECTRIC
4	1	HMIGTO4310	7.5 GRAPHIC TERMINAL TOUCHSCREEN (MAGELIS)	SCHNEIDER ELECTRIC
5	1	FL SWITCH 1008N	INDUSTRIAL ETHERNET SWITCH	PHOENIX CONTACT
6	1	QUINT4-PS/1AC/ 24DC/10	POWER SUPPLY 22.5-28.5V ADJUSTABLE	PHOENIX CONTACT
7	26	UT2,5	UT2,5 TERMINALS	PHOENIX CONTACT
8	16	UT4TG	FUSE TERMINAL BASE	PHOENIX CONTACT
9	12	P-FU5X20LED24	FUSE PLUG	PHOENIX CONTACT
10	4	P-FU5X20LA250	FUSE PLUG	PHOENIX CONTACT
11	7	UT2,5PE	GROUNDING TERMINAL	PHOENIX CONTACT
12	15	E/NS35N	END CLAMP	PHOENIX CONTACT
13	4	FBS 20-6 BU #3032208	FIXED BRIDGE	PHOENIX CONTACT
14	4	FBS 20-5 BU #3036929	INSERTION BRIDGE	PHOENIX CONTACT
15	6	D-UT2,5/10	END COVER	PHOENIX CONTACT
16	6	ATP-UT	PARTITION PLATES	PHOENIX CONTACT
17	1	QUINT4-UPS/24DC /24DC/10	UNINTERRUPTIBLE POWER SUPPLY	PHOENIX CONTACT
18	1	UPS-BAT/PB/ 24DC/4.0AH	ENERGY STORAGE	PHOENIX CONTACT
19	.	.	.	.
20	20	TTC-6-TVSD-C-24DC-UT-I	SURGE PROTECTION #2906831	PHOENIX CONTACT
21	7	TTC-6-LCP #2908729	END COVER	PHOENIX CONTACT
22	56	TTC-6-MOV-C-24DC-UT-I	SURGE PROTECTION #2906837	PHOENIX CONTACT
23	1	PLT-SEC-T3-120 -FM-UT	TYPE 3 SURGE PROTECTION DEVICE	PHOENIX CONTACT
24	AN	F2X4LG6	TYPE F NARROW SLOT WIRING DUCT	PANDUIT
25	AN	C2LG6	WIRING DUCT COVER	PANDUIT
26	1	TMC 71C 10A #0902072	CIRCUIT BREAKER	PHOENIX CONTACT
26a	1	UT6-TMCM 10A #0916610	CIRCUIT BREAKER	PHOENIX CONTACT
27	AN	1492DR6	EXTENDED DIN RAIL	ALLEN BRADLEY
28	AN	1492-DR5	DIN RAIL	ALLEN BRADLEY
29	1	IS-50NX-C2	LIGHTNING ARRESTER	POLYPHASER
30	1	ORBIT OR TRANSNET	902 - 928 MHz RADIO SPREAD SPECTRUM	GEMDS
31	2	CAT6	ETHERNET PATCH CABLE (4' - BLACK)	BELDEN
32	1	.	CABLE - PLC TO MODEM (TO LENGTH)	.
33	1	DRUBGFI15	DIN RAIL UTILITY BOX	HUBBELL

AN - As needed
3* - BOM - To include items 3a-3h.

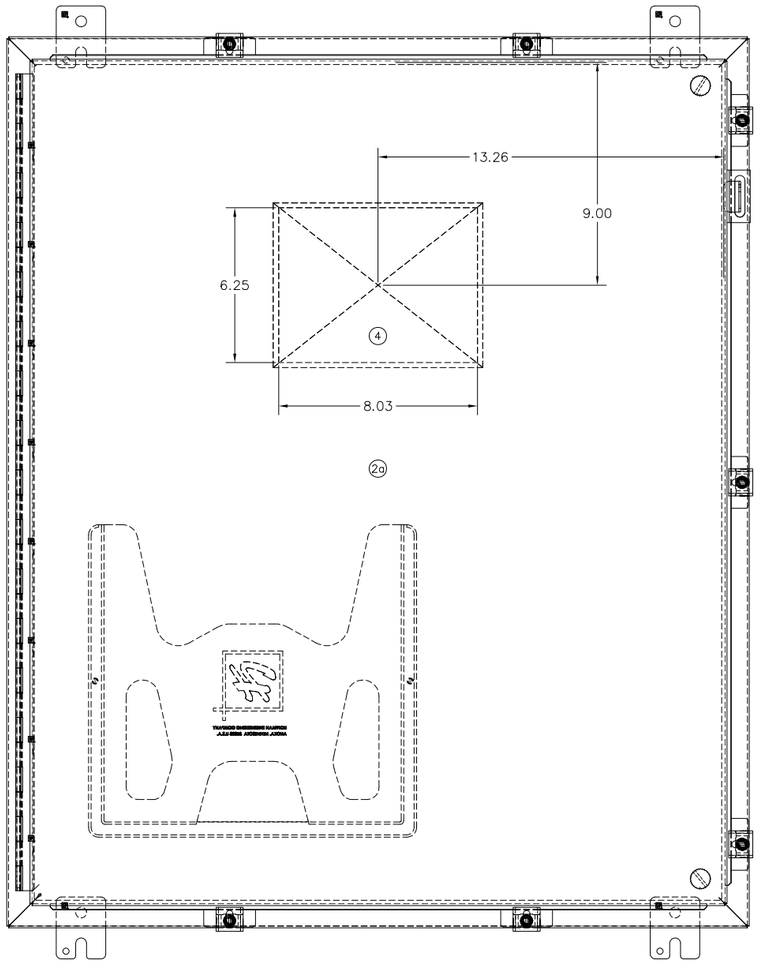
NO.	DATE	DESCRIPTION	BY
02	3/22	DWG MODIFICATIONS "DILKON PASS BOOSTER"	NTUA
01	3/19	DWG UPDATES	NTUA

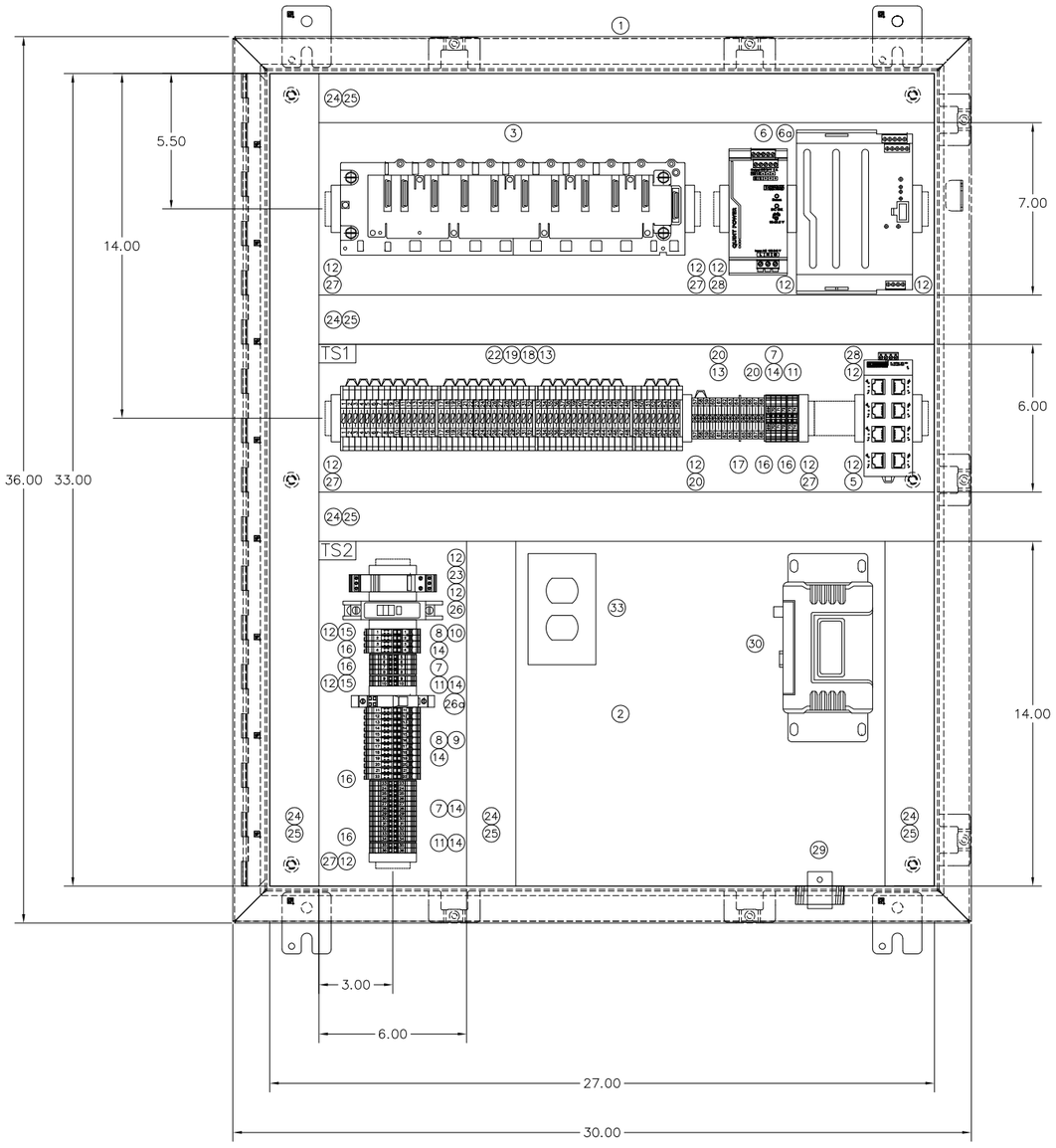
NAVAJO TRIBAL UTILITY AUTHORITY

SCALE: NONE	REVISIONS	BY	DATE
DATE: .	.	.	.
DRN. . CKD. .	.	.	.
APVD. .			

TITLE: PLC CONTROL PANEL
BACKPLANE

W.O.#





BILL OF MATERIALS

ITEM	QTY	PART NO.	DESCRIPTION	MFG
1	1	A-36H30DLP	SINGLE-DOOR TYPE 4 ENCLOSURE	HOFFMAN
2	1	A-36P30	BACKPLANE	HOFFMAN
2a	1	A-NADFK	SWING OUT PANEL KIT	HOFFMAN
3*	.	M340	MODICON M340 BOM	MODICON
3a	1	BMXXBM0800	8-SLOT RACK MODULE	MODICON
3b	1	BMXCPS3020	POWER SUPPLY MODULE	MODICON
3c	1	BMX342020	CPU PROCESSOR MODULE	MODICON
3d	1	BMXDDI1602	DIGITAL INPUT MODULE	MODICON
3e	1	BMXDDM16025	DIGITAL INPUT/OUTPUT MODULE	MODICON
3f	1	BMXAMI0410	ANALOG INPUT MODULE	MODICON
3g	1	BMXAMO0210	ANALOG OUTPUT MODULE	MODICON
3h	4	BMXFTB2010	REMOVABLE CONNECTION BLOCK - SCREW CLAMP	MODICON
4	1	HMIGTO4310	7.5 GRAPHIC TERMINAL TOUCHSCREEN (MAGELIS)	SCHNEIDER ELECTRIC
5	1	FL SWITCH SFN 8TX	INDUSTRIAL EHTERNET SWITCH	PHOENIX CONTACT
6	1	QUINT-PS/1AC/24DC/10	POWER SUPPLY 22.5-28.5V ADJUSTABLE	PHOENIX CONTACT
6a	1	QUINT-UPS/24DC/24DC/10/3.4AH	UNINTERRUPTIBLE POWER SUPPLY	PHOENIX CONTACT
7	26	UT2,5	UT2,5 TERMINALS	PHOENIX CONTACT
8	16	UT4TG	FUSE TERMINAL BASE	PHOENIX CONTACT
9	12	P-FU5X20LED24	FUSE PLUG	PHOENIX CONTACT
10	4	P-FU5X20LA250	FUSE PLUG	PHOENIX CONTACT
11	6	UT2,5PE	GROUNDING TERMINAL	PHOENIX CONTACT
12	15	E/NS35N	END CLAMP	PHOENIX CONTACT
13	4	FBI 20-6 BU #3032208	FIXED BRIDGE	PHOENIX CONTACT
14	4	FBS 20-5 BU #3036929	INSERTION BRIDGE	PHOENIX CONTACT
15	6	D-UT2,5/10	END COVER	PHOENIX CONTACT
16	6	ATP-UT	PARTITION PLATES	PHOENIX CONTACT
17	2	ATP-UK	PARTITION PLATES	PHOENIX CONTACT
18	4	DP-UKK3/5BK #2770833	SLKK5 SPACER PLATE	PHOENIX CONTACT
19	4	D-UKK3/5BK #2770228	SLKK5 ENDCOVER	PHOENIX CONTACT
20	12	TT-UK5/24DC #2794699	TERMITRAB UK5 W/SUPPRESSOR DIODE	PHOENIX CONTACT
21	3	D-TERMITRAB UK5	END COVER	PHOENIX CONTACT
22	56	TT-SLKK5/24DC #2794903	TERMITRAB SLKK5 W/VARISTOR 24DC (MOV)	PHOENIX CONTACT
23	1	PT2PE/S120FM	TERMITRAB AC SURGE PROTECTION	PHOENIX CONTACT
24	AN	F2X4LG6	TYPE F NARROW SLOT WIRING DUCT	PANDUIT
25	AN	C2LG6	WIRING DUCT COVER	PANDUIT
26	1	TMC 61C 10A #0902072	CIRCUIT BREAKER	PHOENIX CONTACT
26a	1	UT6-TMCM 10A #0916610	CIRCUIT BREAKER	PHOENIX CONTACT
27	AN	1492DR6	EXTENDED DIN RAIL	ALLEN BRADLEY
28	AN	1492-DR5	DIN RAIL	ALLEN BRADLEY
29	1	IS-50NX-C2	LIGHTNING ARRESTER	POLYPHASER
30	1	ORBIT OR TRANSNET	902 - 928 MHz RADIO SPREAD SPECTRUM	GEMDS
31	2	CAT6	ETHERNET PATCH CABLE (4' - BLACK)	BELDEN
32	1	.	CABLE - PLC TO MODEM (TO LENGTH)	.
33	1	DRUBGFI15	DIN RAIL UTILITY BOX	HUBBELL

AN - As needed
3* - BOM - To include items 3a-3h.

NO.	DATE	DESCRIPTION	BY
01	12/16	DRAWING	NTUA

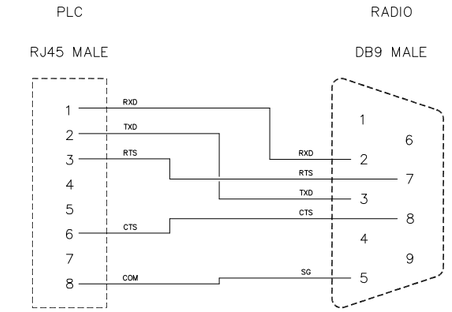
NAVAJO TRIBAL UTILITY AUTHORITY

SCALE: NONE	REVISIONS	BY	DATE
DATE: .	.	.	.
DRN. . CKD. .		.	.
APVD. .			

TITLE: PLC CONTROL PANEL WITH SWING OUT PANEL BACKPLANE

W.O.#

SHEET 5A OF 6



A CABLE DIAGRAM: PLC TO RADIO

NO.	DATE	DESCRIPTION	BY
01	12/16	DWG UPDATES	NTUA

NAVAJO TRIBAL UTILITY AUTHORITY

SCALE: NONE	REVISIONS	BY	DATE
DATE: .	.	.	.
DR'N. . CKD. .	.	.	.
APV'D. .			

TITLE PLC CONTROL PANEL
CABLE PINOUT

W.O.#

SHEET 6 OF 6