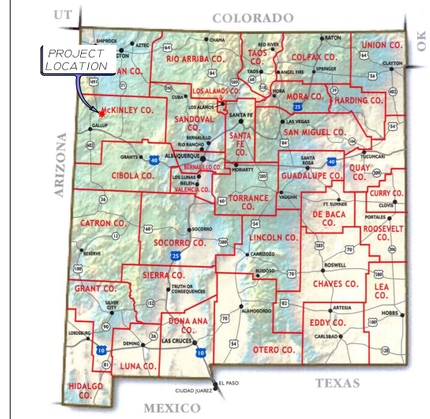
NAVAJO GALLUP WATER SUPPLY PROJECT

BEACON BISTI N9
REACH 10.2.1

90% DRAFT
2/15/23

NOTE: ALL NOTES IN RED ARE DESIGN NOTES ONLY AND WILL NOT BE INCLUDED IN THE FINAL PLAN SET. THESE ARE TO ASSIST IN INTERNAL DESIGN AND REVIEW ONLY.



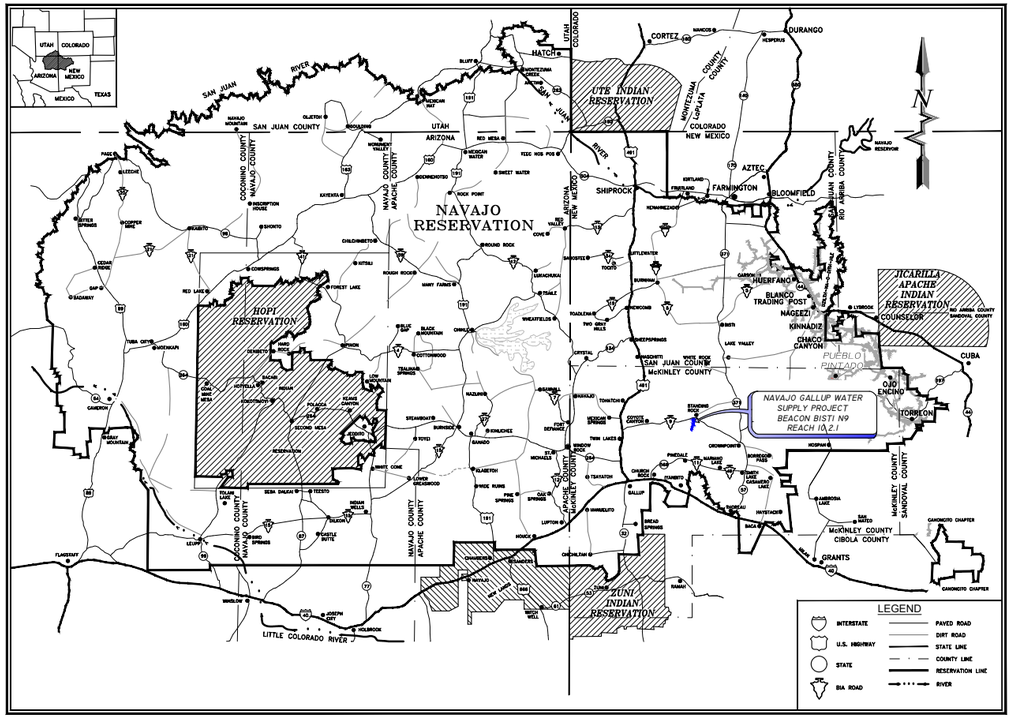
PROJECT VICINITY MAP

BEACON BISTI N9 REACH 10.2
TO STANDING ROCK TANK SITE #1 AND TANK SITE #2 AND #3

February 2023

PROJECT DESCRIPTION

REACH 10.2.1 IS COMPRISED OF THE FOLLOWING FEATURES:
APPROXIMATELY 21,713 FEET OF 6-INCH PVC DR 18 TRANSMISSION PIPELINE AND APPURTENANCES;
ONE (1) CHLORINATOR INCLUDING BUILDING AND APPURTENANCES;
ONE (1) BOOSTER STATION INCLUDING BUILDING AND APPURTENANCES;
NTUA STANDING ROCK CWS CONSECUTIVE SYSTEM ENTRY POINT FOR WATER DELIVERY.



NAVAJO RESERVATION
PROJECT SITE MAP

DRAWING INDEX

GENERAL		**ELECTRICAL PLANS**	
G-1	COVER SHEET & DRAWING INDEX	E-01A	ELECTRICAL LEGEND AND PROJECT NOTES
G-2	GENERAL NOTES & LEGEND	ES-01A	ELECTRICAL SITE PLAN
G-3	BEACON BISTI N9 PROJECT OVERVIEW	E-11A	ELECTRICAL BUILDING PLANS - PUMPING
G-4	HYDRAULIC PROFILE	E-12A	ELECTRICAL BUILDING PLANS - CHLORINATION
G-5	SITE PLAN AND DRAWING KEY INDEX	E-21A	CONTROL PLAN
G-6	SURVEY CONTROL	E-31A	LIGHTNING PROTECTION PLAN
PLAN AND PROFILES		E-32A	LIGHTNING PROTECTION PLAN
C-1	PLAN AND PROFILE STA 00+00 TO STA 28+00	E-41A	NTUA DIAGRAM
C-2	PLAN AND PROFILE STA 28+00 TO STA 56+00	E-42A	NTUA DIAGRAM
C-3	PLAN AND PROFILE STA 56+00 TO STA 84+00	E-43A	NTUA DIAGRAM
C-4	PLAN AND PROFILE STA 84+00 TO STA 112+00	E-51A	POWER RISER DIAGRAM AND DETAILS - SURGE TANK
C-5	PLAN AND PROFILE STA 112+00 TO STA 140+00	E-52A	POWER RISER DIAGRAM AND DETAILS - CHLORINATION
C-6	PLAN AND PROFILE STA 140+00 TO STA 168+00	E-61A	ELECTRICAL DETAILS
C-7	PLAN AND PROFILE STA 168+00 TO STA 196+00	E-01B	ELECTRICAL LEGEND AND PROJECT NOTES
C-8	PLAN AND PROFILE STA 196+00 TO STA 217+12.7	ES-01B	ELECTRICAL SITE PLAN
SITE PLANS		E-41B	NTUA DIAGRAM
C-9	STANDING ROCK TANK #1 OVERALL SITE PLAN	E-42B	NTUA DIAGRAM
C-10	STANDING ROCK TANK #1 SITE PLAN	E-43B	NTUA DIAGRAM
C-11	STANDING ROCK TANK #1 SITE GRADING PLAN	E-51B	POWER RISER DIAGRAM AND DETAILS
C-12	STANDING ROCK TANK #1 SITE PIPING PLAN	E-61B	ELECTRICAL DETAILS
C-13	STANDING ROCK TANK #1 SITE PIPE INVERTS		
C-14	STANDING ROCK TANK #1 VALVE NUMBERING PLAN		
C-15	STANDING ROCK TANK #2 AND #3 SITE PLAN		
C-16	S. R. TANK #2 AND #3 SITE PIPING PLAN		
C-17	S. R. TANK #2 AND #3 VALVE NUMBERING PLAN		
C-18	S.R. TANK #2 AND #3 DRAIN LINE PROFILE		
DETAILS			
DT-1	TRENCH DETAILS		
DT-2	MISCELLANEOUS CONSTRUCTION DETAILS		
DT-3	THRUST BLOCK & JOINT RESTRAINT DETAILS		
DT-4	CASED ROAD CROSSING DETAILS		
DT-5	GAS LINE CROSSING DETAILS		
DT-6	VALVE DETAILS		
DT-7	COMBINATION AIR VALVE DETAILS		
DT-8	2-INCH FLUSH VALVE WITH RISER DETAIL		
DT-9	SENSOR LINE & YARD HYDRANT DETAILS		
DT-10	TRANSDUCER VAULT DETAILS		
DT-11	CHLORINATION SYSTEM DETAILS (1 OF 2)		
DT-12	CHLORINATION SYSTEM DETAILS (2 OF 2)		
DT-13	CHLORINATION BUILDING AND PIPING		
DT-14	CHLORINATION & BOOSTER BUILDING DETAILS		
DT-15	PRECAST BOOSTER STATION (1 OF 2)		
DT-16	PRECAST BOOSTER STATION (2 OF 2)		
DT-17	SURGE TANK DETAILS		
DT-18	EROSION CONTROL DETAILS (1 OF 3)		
DT-19	EROSION CONTROL DETAILS (2 OF 3)		
DT-20	EROSION CONTROL DETAILS (3 OF 3)		
DT-21	FENCE DETAILS		

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Revision	Date	Description	By	Chkd

Client: The Navajo Nation
Location: Standing Rock, NM

COVER SHEET & DRAWING INDEX
NAVAJO GALLUP WATER SUPPLY PROJECT
BEACON BISTI N9 - REACH 10.2.1
McKINLEY COUNTY, NEW MEXICO

90% REVIEW DRAFT
PRELIMINARY
NOT FOR CONSTRUCTION
2/2023

Designed	Drawn	Checked
TTT	MvH/AaV	JMG

THIS DRAWING IS INCOMPLETE AND NOT TO BE USED FOR CONSTRUCTION UNLESS IT IS STAMPED, SIGNED AND DATED

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Date: February 2023
Scale: Horiz: N/A
Vert: N/A
Project No: 6922268
Sheet: G-1

P:\6-Beacon Bisti N9 Water Line (6922268)\CAD\Civil\Reach 10.2.1 Plan Set\Construction Plans\Reach 10.2.1 Cover Gen Notes.dwg
2/15/2023 5:02:14 PM mvh

GENERAL NOTES

1. THE ENGINEER WAIVES ANY AND ALL RESPONSIBILITY AND IS NOT LIABLE FOR PROBLEMS THAT MAY ARISE FROM CONTRACTOR'S FAILURE TO FOLLOW THESE DRAWINGS, SPECIFICATIONS, AND THE DESIGN INTENT THEY CONVEY, OR FOR PROBLEMS ARISING FROM FAILURE TO OBTAIN AND/OR FOLLOW THE ENGINEER'S GUIDANCE WITH RESPECT TO ANY ERRORS, OMISSIONS, INCONSISTENCIES, AMBIGUITIES, OR CONFLICTS.

2. IF THERE IS A CONFLICT BETWEEN THE PLANS, SPECIFICATIONS AND/OR MANUFACTURER'S RECOMMENDATIONS FOR ANY DEVICE, PART, OR MATERIAL USED IN THE PROJECT, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER, IN WRITING, FOR CLARIFICATION AT LEAST TWO WEEKS PRIOR TO CONSTRUCTION OF SAID DEVICE, PART, OR MATERIAL.

3. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO FAMILIARIZE HIMSELF WITH THE LOCATION OF ALL UTILITIES LOCATED WITHIN THE LIMITS OF CONSTRUCTION. THE GENERAL LOCATION OF KNOWN EXISTING UTILITIES HAS BEEN SHOWN ON THE CONSTRUCTION DRAWINGS TO INDICATE THAT CAUTION MUST BE EXERCISED WHEN WORKING IN THESE AREAS. IN MANY CASES THE EXACT LOCATION OF THE FACILITIES IS NOT KNOWN. THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING AND PROTECTING ALL OVERHEAD AND UNDERGROUND UTILITIES WITHIN THE VICINITY OF THE NEW CONSTRUCTION. PRIOR TO THE START OF CONSTRUCTION, THE CONTRACTOR, WORKING WITH THE RESPECTIVE UTILITY COMPANIES, SHALL ACCURATELY LOCATE AND MARK ALL BURIED FACILITIES, INCLUDING SERVICE LINES. ALL EQUIPMENT LABOR, ETC. NECESSARY TO PROPERLY LOCATE THE EXISTING UTILITIES SHALL BE FURNISHED BY THE CONTRACTOR, THE COST OF WHICH SHALL BE INCIDENTAL TO THE WORK.

4. CONTRACTOR SHALL REPAIR ANY EXISTING STRUCTURE OR UTILITY PIPELINE DAMAGED DURING THE EXECUTION OF THE PROJECT, AT NO ADDITIONAL COSTS TO THE OWNER.

5. CONTRACTOR IS SOLELY RESPONSIBLE FOR CONSTRUCTING THE PROJECT ACCORDING TO CURRENT NEW MEXICO STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION (NMSSPWC) AWWA SPECS AND NAVAJO NATION / NTUA STANDARDS, INCLUDING WHERE PARTICULAR WORK ITEMS ARE NOT SPECIFIED HEREIN.

6. CONTRACTOR SHALL COMPLY WITH ALL REQUIREMENTS AS SET FORTH IN THE TECHNICAL SPECIFICATIONS AND CONTRACT DOCUMENTS. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO CONTACT THE ENGINEER REGARDING ANY QUESTION ARISING FROM ANY ASPECT OF THIS PROJECT NOT SPECIFICALLY COVERED IN THE PLANS AND TECHNICAL SPECIFICATIONS, OR ANY CHANGES OR CORRECTIONS TO THE PLANS AND SPECS.

7. THESE DRAWINGS DO NOT INCLUDE NECESSARY COMPONENTS FOR CONSTRUCTION SAFETY, WHICH SHALL REMAIN WHOLLY THE RESPONSIBILITY OF THE CONTRACTOR. ALL WORK ON THIS PROJECT SHALL BE PERFORMED IN ACCORDANCE WITH APPLICABLE FEDERAL (OSHA), STATE, TRIBAL AND LOCAL LAWS, RULES AND REGULATIONS CONCERNING SAFETY AND HEALTH. ALL EXCAVATION, TRENCHING AND SHORING ACTIVITIES MUST BE CARRIED OUT IN ACCORDANCE WITH OSHA 29 CFR 1926, SUBPART P - EXCAVATIONS.

8. CONTRACTOR SHALL PROVIDE INGRESS AND EGRESS TO ANY LOCAL BUSINESSES AND RESIDENTS AS REQUIRED FOR THE DURATION OF THE PROJECT. THE CONTRACTOR SHALL ADVISE OF AND SCHEDULE ACCESS CLOSURES AT LEAST 24 HOURS IN ADVANCE WITH PROPERTY OWNERS AND THE ENGINEER.

9. THE CONTRACTOR SHALL CONFINE HIS OPERATIONS TO THE CONSTRUCTION LIMITS OF THE PROJECT AND SHALL IN NO WAY ENCROACH ONTO ADJACENT PROPERTIES UNLESS LEGAL EASEMENTS ARE PROVIDED OR SECURED BY THE CONTRACTOR. THE CONTRACTOR WILL BE HELD RESPONSIBLE FOR ANY DAMAGE CAUSED BY CONSTRUCTION ACTIVITIES TO PUBLIC OR PRIVATE PROPERTY, INCLUDING UTILITIES.

10. THE DRAWINGS CONTAIN SPECIFIC EROSION CONTROL FEATURES DESIGNED BY THE ENGINEER TO PROTECT PROJECT FACILITIES FROM EROSION. THESE FEATURES ARE NOT DESIGNED TO PREVENT POLLUTION OF WATERWAYS DUE TO SEDIMENT. THE CONTRACTOR IS WHOLLY RESPONSIBLE TO PROVIDE A STORM WATER POLLUTION PREVENTION PLAN (SWPPP) AND IMPLEMENT THE BEST MANAGEMENT PRACTICES (BMPs) REQUIRED THEREIN, IN ADDITION TO THE FEATURES SHOWN ON THE DRAWINGS. ALL BID ITEMS REFERRING TO SPECIFIC EROSION CONTROL FEATURES, SUCH AS RIPRAP OR ROCK DAMS, ARE APPLICABLE ONLY TO FEATURES DESIGNED BY THE ENGINEER. A SEPARATE BID ITEM(S) IS PROVIDED FOR PREPARATION AND IMPLEMENTATION OF THE CONTRACTOR'S SWPPP.

11. ALL RIPRAP, ROCK CHECK DAMS AND OTHER EROSION CONTROL FEATURES SHOWN ON THE DRAWINGS ARE APPROXIMATE WITH REGARD TO QUANTITY, LOCATION, DIMENSIONS, SPACING, AND ORIENTATION. EXACT PLACEMENT WILL BE DETERMINED IN FIELD BY ENGINEER AFTER FINAL GRADING IS COMPLETE.

12. ALL AREAS DISTURBED BY THE CONSTRUCTION ACTIVITIES OF THIS PROJECT SHALL BE RESTORED AND RE-GRADED IN A MANNER ACCEPTABLE TO THE OWNER, ENGINEER, AND LAND OWNER. ALL DISTURBED AREAS SHALL BE RE-SEEDED PER THE CONTRACT DOCUMENTS.

13. FUSIBLE PVC PIPE SHALL BE USED IN LIEU OF ALL RESTRAINED JOINTS AND SHALL BE USED ON BOTH SIDES OF ALL ISOLATION VALVES, CASINGS, TEES, AND BENDS. REFER TO SPECIFICATIONS AND DETAIL, SHEET DT-3. IN ADDITION, THE PLAN AND PROFILE SHEETS INDICATE SPECIFIC ADDITIONAL LOCATIONS WHERE FUSIBLE PVC PIPE MUST BE USED IN LIEU OF BELL-AND-SPIGOT PIPE. IN THE ABSENCE OF ANY REQUIREMENT TO USE FUSIBLE PVC PIPE, CONTRACTOR HAS THE OPTION TO USE EITHER FUSIBLE OR BELL-AND-SPIGOT PIPE. IN THESE DRAWINGS, THE TERMS "BELL-AND-SPIGOT PIPE" AND "JOINTED PIPE" ARE USED SYNONYMOUSLY.

14. THE PLAN AND PROFILE SHEETS SHOW HORIZONTAL ANGLES WITH DI ELL(S) OR FUSIBLE PVC SWEEP(S) CALLED OUT. THE CONTRACTOR IS RESPONSIBLE FOR INSTALLING THE SPECIFIED FITTINGS AT EACH LOCATION. IN ADDITION TO THE SPECIFIED FITTINGS(S), USE JOINT DEFLECTION TO ACHIEVE THE SPECIFIED HORIZONTAL ANGLE. IF A LOCATION IS SHOWN WITHOUT SPECIFYING A FITTING, USE JOINT DEFLECTION TO ACHIEVE THE HORIZONTAL ANGLE.

15. ALL PRESSURE RATINGS GIVEN HEREIN FOR PIPES, VALVES, FITTINGS AND OTHER COMPONENTS REFER TO COLD WATER WORKING PRESSURE RATING, UNLESS OTHERWISE NOTED.

16. VERTICAL CLEARANCES AT WATERLINE CROSSINGS ON PLAN AND PROFILE SHEETS CALLED OUT AS "MIN CLR" REFER TO MINIMUM CLEARANCE FROM BOTTOM OF EXISTING WATERLINE TO TOP OF PROPOSED WATERLINE. VERTICAL CLEARANCES FOR CASINGS CALLED OUT AS "MIN CLR TO CASING" REFER TO MINIMUM CLEARANCE FROM BOTTOM OF EXISTING PIPELINE OR FINISHED GRADE TO TOP OF PROPOSED CASING. VERTICAL CLEARANCES AT WASH CROSSINGS CALLED OUT AS "MIN TO CL" REFER TO MINIMUM PIPE DEPTH, MEASURED FROM BOTTOM OF WASH TO VERTICAL CENTERLINE OF PROPOSED WATERLINE.

17. REFER TO PROFESSIONAL REGISTRANTS IDENTIFIED ON INDIVIDUAL PLAN SHEETS AS THE RESPONSIBLE PARTY FOR THOSE DISCIPLINES. THE SEAL AND SIGNATURE OF THE PROFESSIONAL REGISTRANT IDENTIFIED ON THIS COVER SHEET DOES NOT INDICATE RESPONSIBLE CHARGE FOR ALL SHEETS CONTAINED WITHIN THIS PACKAGE OR ANY PLAN SHEETS NOT SIGNED AND SEALED.

18. ALL SCALES ARE BASED ON 11" x 17" SHEET SIZE.

CONTACT INFORMATION:

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ABBREVIATIONS

AASHTO	AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS
A.C.	ASPHALTIC CONCRETE
ACI	AMERICAN CONCRETE INSTITUTE
AC.	ACRE
AC-FT.	ACRE FEET
AISC	AMERICAN INSTITUTE OF STEEL CONSTRUCTION
ALIGN.	ALIGNMENT
ALUM	ALUMINUM
AMSL	ABOVE MEAN SEA LEVEL
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE
APPROX.	APPROXIMATE
ARV	AIR RELEASE VALVE
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS
AWG	AMERICAN WIRE GAUGE
AWWA	AMERICAN WATER WORKS ASSOCIATION
BFV	BUTTERFLY VALVE
BIA	BUREAU OF INDIAN AFFAIRS
BLDG	BUILDING
BLM	BUREAU OF LAND MANAGEMENT
BV	BALL VALVE
BVCE	BEGIN VERTICAL CURVE ELEVATION
BVCS	BEGIN VERTICAL CURVE STATION
CL	CENTERLINE
CFS	CUBIC FEET PER SECOND
CI	CAST IRON
CLR.	CLEARANCE
CMP	CORRUGATED METAL PIPE
COMM.	COMMUNICATION
CONC.	CONCRETE
CONST.	CONSTRUCTION
CONT.	CONTINUOUS
CONT.	CONTINUED
COR.	CORNER
COUP.	COUPLING
CP	CONTROL POINT
CTR	CENTER
CU	CUBIC
CY	CUBIC YARD
DI	DUCTILE IRON
DIA	DIAMETER
DIMS	DIMENSIONS
DR	DIMENSION RATIO
DW	DRIVEWAY
E	EAST
E	EASTING
EA.	EACH
ED.	EDITION
EG	EXISTING GRADE
ELEC.	ELECTRICAL
EL., ELEV.	ELEVATION
EOP	EDGE OF PAVEMENT
EQ.	EQUAL
ESMT.	EASEMENT
EVCE	END VERTICAL CURVE ELEVATION
EVCS	END VERTICAL CURVE STATION
EX, EXIST.	EXISTING
FBE	FUSION BONDED EPOXY
FF	FINISHED FLOOR
FFE	FINISHED FLOOR ELEVATION
FG	FINISHED GRADE
FIG.	FIGURE
FL	FLANGE
FND.	FOUND
FNPT	FEMALE NATIONAL PIPE THREAD
FRP	FIBER REINFORCED PLASTIC
FT.	FEET
FV	FLUSH VALVE
GA.	GAUGE
GALV.	GALVANIZED
GI	GALVANIZED IRON
GPM	GALLONS PER MINUTE
GV	GATE VALVE
HDD	HORIZONTAL DIRECTIONAL DRILLING
HDPE	HIGH DENSITY POLYETHYLENE
HORIZ.	HORIZONTAL
HP	HORSE POWER
HT	HEIGHT
HWY	HIGHWAY
I.A.	INDIAN ALLOTMENT
I.D.	INNER DIAMETER
I.E.	THAT IS, FOR EXAMPLE
IN.	INCH
INV	INVERT
IPS	IRON PIPE SIZE
KSI	KILO POUNDS PER SQUARE INCH
LAT	LATITUDE
L, LEN	LENGTH
LF	LINEAR FEET
LT	LEFT
LONG	LONGITUDE
LVC	LENGTH VERTICAL CURVE
MANUF	MANUFACTURER
MAX.	MAXIMUM
MIL	ONE THOUSANDTHS OF AN INCH
MIN.	MINIMUM
M.J.	MECHANICAL JOINT
MNPT	MALE NATIONAL PIPE THREAD
M.S.L.	MEAN SEA LEVEL
N	NORTH
N	NORTHING
N.C.	NATIONAL ELECTRICAL CODE
NEC	NORMALLY CLOSED
NG	NATURAL GAS
NGWSP	NAVAJO GALLUP WATER SUPPLY PROJECT
NM	NEW MEXICO
NMDOT	NEW MEXICO DEPARTMENT OF TRANSPORTATION
NMED	NEW MEXICO ENVIRONMENT DEPARTMENT
NN	NAVAJO NATION
NO.	NUMBER
N.O.	NORMALLY OPEN
NPT	NATIONAL PIPE THREAD
NTS	NOT TO SCALE
OAE	OR APPROVED EQUAL
O.C.	ON CENTER
O.C.E.W.	ON CENTER EACH WAY
O.D.	OUTER DIAMETER
OHE	OVERHEAD ELECTRICAL
PE	PLAIN END
P.G.P.	PER GRADING PLAN
PI	POINT OF INFLECTION
PROP	PROPOSED
PRV	PRESSURE REDUCING VALVE
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PVC	POLY VINYL CHLORIDE
PVI	POINT VERTICAL INFLECTION
PVT	PRIVATE
Q	FLOW
QTY.	QUANTITY
R	RADIUS
R-	RANGE
REF	REFERENCE
RO	ROUGH OPENING
ROW	RIGHT OF WAY
RT	RIGHT
S	SOUTH
SCH	SCHEDULE
SCO	SANDOVAL COUNTY
SDR	STANDARD DIMENSION RATIO
SEC.	SECTION
SF	SAFETY FACTOR
SHT	SHEET
SPECS.	SPECIFICATIONS
SS	STAINLESS STEEL
STA	STATION
STD.	STANDARD
SW	SIDEWALK
T	TOWNSHIP
TBD	TO BE DETERMINED
TBR	TO BE REMOVED
TCE	TEMPORARY CONSTRUCTION EASEMENT
TDH	TOTAL DYNAMIC HEAD
TELE.	TELEPHONE
TEMP.	TEMPORARY
THK	THICK
TNT	NAVAJO TRIBAL TRUST
T.O.	TOP OF
TRANS	TRANSFORMER
TW	TOP OF WALL
TYP	TYPICAL
UGE	UNDERGROUND ELECTRIC
USGS	UNITED STATES GEOLOGICAL SURVEY
V	VOLUME
VB	VACUUM BREAKER
VERT.	VERTICAL
VLV	VALVE
VR	VACUUM RELIEF
W	WATER
W	WEST
W/	WITH
WL	WATERLINE
WP	WORKING PRESSURE
WT	WALL THICKNESS
WV	WATER VALVE
YDS	YARDS
Z	ZENITH

LEGEND

EXISTING

- WV — ISOLATION VALVE
- W — WATER VAULT
- WM — WATER METER
- HYDRANT
- POWER POLE
- GUY ANCHOR
- ELECTRICAL J-BOX
- TELEPHONE PEDESTAL
- STORM DRAIN INLET / OUTLET
- BUILDING
- CATTLE GUARD
- ROAD SIGN
- EXISTING DRAINAGE WASH
- GUARD RAIL
- PAVED ROAD EDGE
- DIRT ROAD EDGE
- ROAD CENTER
- 6490 — CONTOUR MAJOR
- 6492 — CONTOUR MINOR
- SECTION CORNER
- CULTURALLY SENSITIVE AREA DO NOT ENCROACH
- *Navajo Tribal Trust* — CURRENT LAND STATUS (OWNER)
- SECTION LINE
- TOWNSHIP / RANGE LINE
- X — FENCE
- OHE — OVERHEAD POWER LINE
- UGE — UNDERGROUND POWER LINE
- OHT — OVERHEAD TELEPHONE LINE
- UGT — UNDERGROUND TELEPHONE LINE
- W — WATER LINE
- G — GAS LINE

LEGEND

PROPOSED

- W — WATER LINE
- OHE — POWER LINE
- X — FENCE
- PIPE CASING
- GATE VALVE
- BUTTERFLY VALVE
- VACUUM BREAKER / AIR RELEASE VALVE COMBO
- FLUSH VALVE
- POWER POLE
- GUY ANCHOR
- DOUBLE SWING GATE
- 6965 — CONTOUR MAJOR
- 6964 — CONTOUR MINOR
- 40' WATERLINE EASEMENT
- TEMPORARY CONSTRUCTION EASEMENT
- ACCESS DRIVE / ROAD
- RIP RAP OR CABLE CRETE
- GRAVEL OVER BASE COURSE
- SWALE
- DIRECTION OF FLOW
- MATCH LINE

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Revision	Date	Description	By	Chkd

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Client: The Navajo Nation
Location: Standing Rock, NM

GENERAL NOTES & LEGEND
NAVAJO GALLUP WATER SUPPLY PROJECT
BEACON BISTI N9 - REACH 10.2.1
McKINLEY COUNTY, NEW MEXICO

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811 Know what's BELOW. CALL before you dig.

Date: February 2023
Scale: Horiz: N/A Vert: N/A
Project No: 6922268
Sheet: G-2

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McKINLEY COUNTY

NASCHITTI

NASCHITTI

To Naschitti

MEXICAN SPRINGS

491

US 491

TOHATCHI

STANDING ROCK

REACH 10.1 TURNOUT

BBN9 REACH 10.1

TOHATCHI

PUMPING PLANT 12

BBN9 REACH 10.2

SAN JUAN LATERAL REACH 9
42" AND 48" STEEL PIPE

REACH 10.1
SURGE TANK

REACH 10.2.1 TURNOUT

STANDING ROCK

PUMPING PLANT 13

CL

SAN JUAN LATERAL REACH 10
42" STEEL PIPE

STANDING ROCK NTUA CWS CONNECTION AT
EXISTING NTUA STANDING ROCK TANK 1
BASE ELEV: 6433.75 FT.
OVERFLOW ELEV: 6456.92 FT.
CAP: 163,000 GAL
REACH 10.2.1 CHLORINATOR
STANDING ROCK 1 BOOSTER STATION:
ELEV: 6434 FT.
NORMAL TDH: 244 FT.
RATED POWER: 20 HP
FLOW: 150 GPM

BBN9 REACH 10.2.1
6" PVC PIPE
225 GPM (0.5 CFS)
UPSTREAM OF SR TANK 1
150 GPM (0.33 CFS)
DOWNSTREAM OF SR TANK 1
4.1 MI. (21,713 FT)

PUMPING PLANT 7
TDH: 517 FT.
FLOW: 40.23 CFS
ELEV: 6220 FT.

9

Route 9

COYOTE CANYON

COYOTE CANYON

REACH 10.1.1 TURN OUT

BBN9 REACH 10.1.1

TWIN LAKES

SAN JUAN LATERAL REACH 11
42" STEEL PIPE

REACH 10.1.1
CHLORINATOR

TWIN LAKES

STANDING ROCK NTUA CWS CONNECTION AT
EXISTING NTUA STANDING ROCK TANKS 2 & 3
BASE ELEV: 6643.75 FT.
OVERFLOW ELEV: 6662.45 FT.
CAP: 83,000 GAL & 144,000 GAL RESPECTIVELY

BBN9 REACH 10.3

NAHODISHGISH

NAHODISHGISH

Route 9

CROWNPOINT

BBN9 REACH 10.3.1

EXISTING NTUA NAHODISHGISH TANK (1X)

EXISTING NTUA COYOTE CANYON TANKS (2X)

EXISTING NTUA CROWNPOINT TANK

CROWNPOINT

SAN JUAN LATERAL REACH 12A
42" STEEL PIPE

PUMPING PLANT 14

SAN JUAN LATERAL REACH 12.1
30" STEEL PIPE

TOHLAKAI PUMPING PLANT
TDH: 306 FT.
FLOW: 36.5 CFS
ELEV: 6540 FT.

264

SAN JUAN LATERAL REACH 12B
30" STEEL PIPE

US 491

ROCK SPRINGS

CHURCH ROCK

PINEDALE

MARIANO LAKE

LITTLEWATER

491

371

GALLUP REGIONAL SYSTEM

GALLUP

IYANBITO

SMITH LAKE

CASAMERO LAKE

BECENTI

LEGEND

- SJL REACH 9
- SJL REACH 10
- BBN9 REACH 10.1
- BBN9 REACH 10.1.1
- BBN9 REACH 10.2
- BBN9 REACH 10.2.1
- BBN9 REACH 10.3
- BBN9 REACH 10.3.1
- SJL REACH 11
- SJL REACH 12A
- SJL REACH 12B
- SJL REACH 12.1
- GALLUP REGIONAL SYSTEM
- NAVAJO CHAPTER BOUNDARY
- STORAGE TANK
- SURGE TANK
- PUMP
- CHLORINATOR (CL)

N

0' 8000' 16000'

GRAPHIC SCALE

BEACON BISTI N9 PROJECT OVERVIEW

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Revision	Date	Description	By	Chkd

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www.soudermiller.com

Client: The Navajo Nation

Location: Standing Rock, NM

BEACON BISTI N9 PROJECT OVERVIEW
NAVAJO GALLUP WATER SUPPLY PROJECT
BEACON BISTI N9 - REACH 10.2.1

McKINLEY COUNTY, NEW MEXICO

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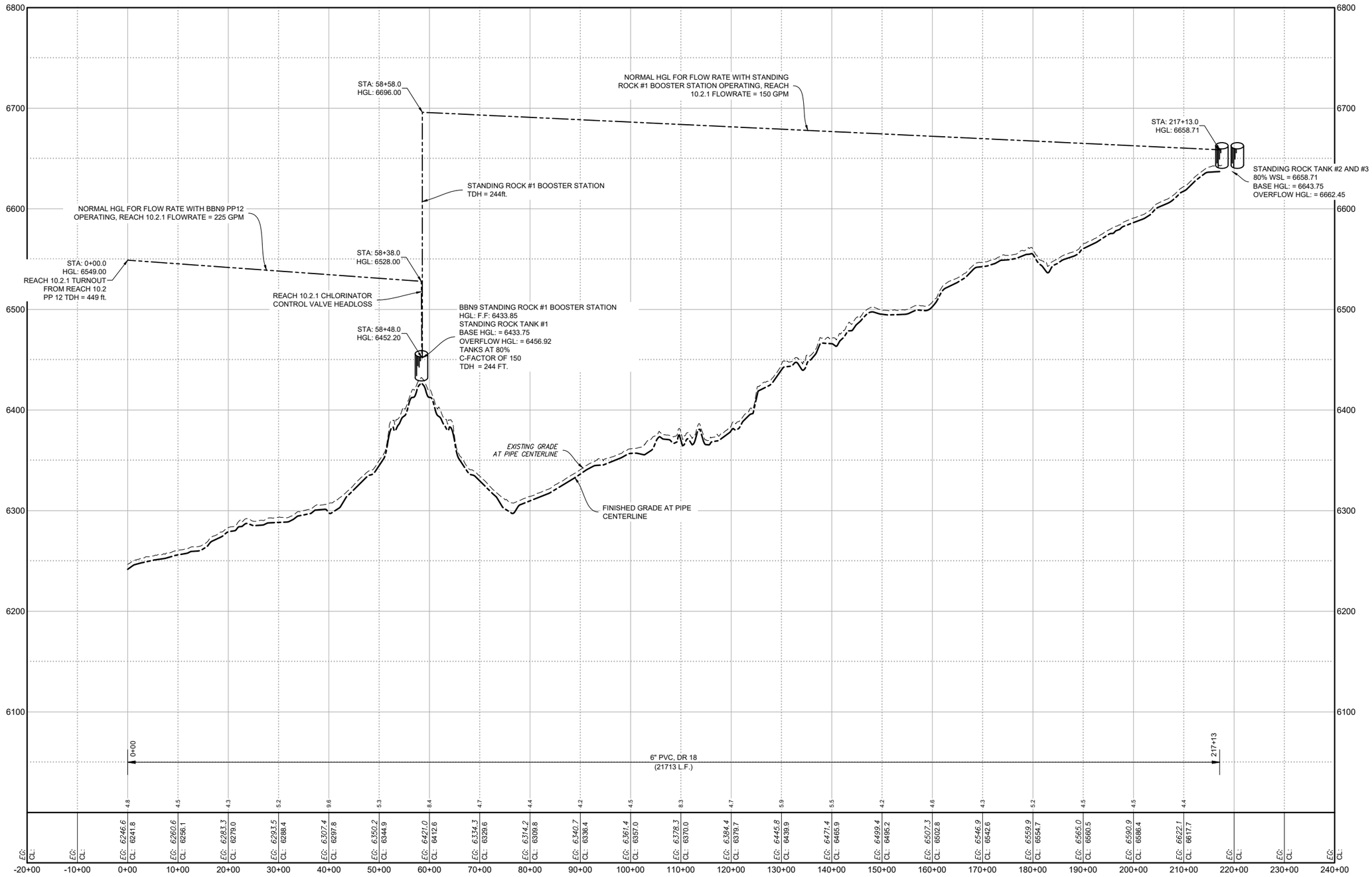
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Project No: 6922268

Sheet: G-3

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0' 1000' 2000'

GRAPHIC SCALE

BBN9 REACH 10.2.1 HYDRAULIC PROFILE
6" WATERLINE

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Location: Standing Rock, NM

HYDRAULIC PROFILE
NAVAJO GALLUP WATER SUPPLY PROJECT
BEACON BISTI N9 - REACH 10.2.1
McKINLEY COUNTY, NEW MEXICO

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PROJECT SITE PLAN AND DRAWING KEY INDEX

CONTACT INFORMATION:

OWNER: NAVAJO NATION WATER MANAGEMENT BRANCH
JASON JOHN (928) 729-4004
DIRECTOR OF NAVAJO NATION DEPARTMENT OF WATER RESOURCES

ENGINEER: SOUDER, MILLER & ASSOCIATES
TORY TADANO, P.E. (505) 299-0942 Office

NAVAJO TRIBAL UTILITY AUTHORITY (NTUA)
(800) 528-5011

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Client: The Navajo Nation
Location: Standing Rock, NM

SITE PLAN AND DRAWING KEY INDEX
NAVAJO GALLUP WATER SUPPLY PROJECT
BEACON BISTI N9 - REACH 10.2.1
McKINLEY COUNTY, NEW MEXICO

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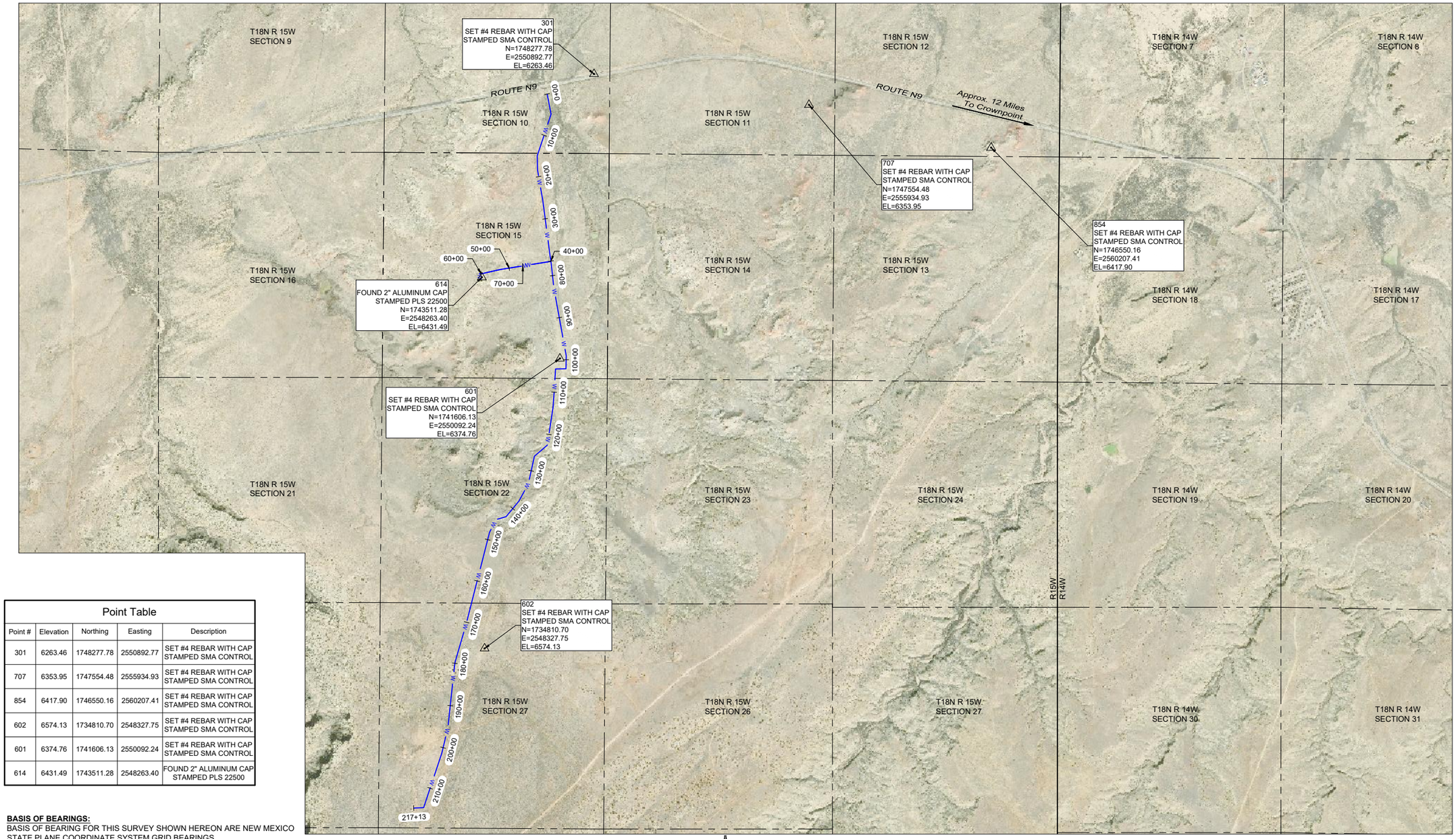
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Sheet: G-5

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SURVEY CONTROL SHEET
NAVAJO GALLUP WATER SUPPLY PROJECT
BEACON BISTI N9-REACH 10.2.1
McKINLEY COUNTY, NEW MEXICO



Point Table				
Point #	Elevation	Northing	Easting	Description
301	6263.46	1748277.78	2550892.77	SET #4 REBAR WITH CAP STAMPED SMA CONTROL
707	6353.95	1747554.48	2555934.93	SET #4 REBAR WITH CAP STAMPED SMA CONTROL
854	6417.90	1746550.16	2560207.41	SET #4 REBAR WITH CAP STAMPED SMA CONTROL
602	6574.13	1734810.70	2548327.75	SET #4 REBAR WITH CAP STAMPED SMA CONTROL
601	6374.76	1741606.13	2550092.24	SET #4 REBAR WITH CAP STAMPED SMA CONTROL
614	6431.49	1743511.28	2548263.40	FOUND 2" ALUMINUM CAP STAMPED PLS 22500

BASIS OF BEARINGS:
BASIS OF BEARING FOR THIS SURVEY SHOWN HEREON ARE NEW MEXICO STATE PLANE COORDINATE SYSTEM GRID BEARINGS
REFERENCE FRAME: NAD 1983 (2011) (EPOCH 2010.000)
U.S. STATE PLANE NEW MEXICO WEST 3003 ZONE
ALL DISTANCES ARE GRID DISTANCES

VERTICAL DATUM:
NAVD 1988
GEOID 12B (CONUS) WAS UTILIZED TO ESTABLISH ORTHO HEIGHTS

METHODS:
ORIGINAL CONTROL ON THIS PROJECT WAS OBSERVED AND SET BETWEEN MAY 8, 2019 AND NOVEMBER 11, 2019 WITH FINAL ADJUSTMENTS MADE BY NOVEMBER 20, 2019. ALL POINTS WERE OBSERVED USING TRIMBLE S5 TOTAL STATION AND TRIMBLE R8 GPS RECEIVERS UTILIZING RTK GPS METHODS.

N

0' 1200' 2400'
GRAPHIC SCALE

SURVEY CONTROL PLAN

I, JAYSON NATERA, NEW MEXICO PROFESSIONAL SURVEYOR NO. 27749, DO HEREBY CERTIFY THAT THIS CONTROL SURVEY REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION BASED ON AN ACTUAL SURVEY ON THE GROUND AS DESCRIBED HEREIN; THAT I AM RESPONSIBLE FOR THIS SURVEY; AND THAT THE SURVEY AND REPORT MEETS THE MINIMUM STANDARDS FOR SURVEYING IN NEW MEXICO.

JAYSON NATERA, N.M.P.S. 27749

JAYSON NATERA NEW MEXICO 27749 PROFESSIONAL SURVEYOR 10/28/2022

DATE 10/28/2022

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Client: The Navajo Nation
Location: Standing Rock, NM

SURVEY CONTROL
NAVAJO GALLUP WATER SUPPLY PROJECT
BEACON BISTI N9 - REACH 10.2.1
McKINLEY COUNTY, NEW MEXICO

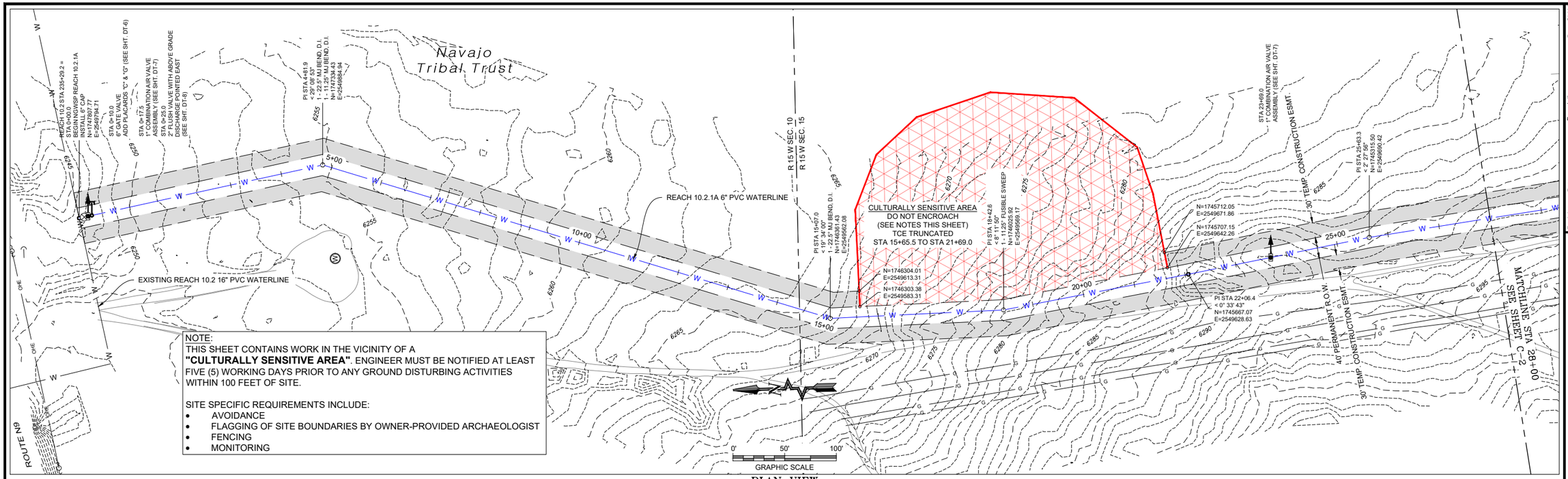
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	AD	WB

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Vert: N/A
Project No: 6922268
Sheet: G-6

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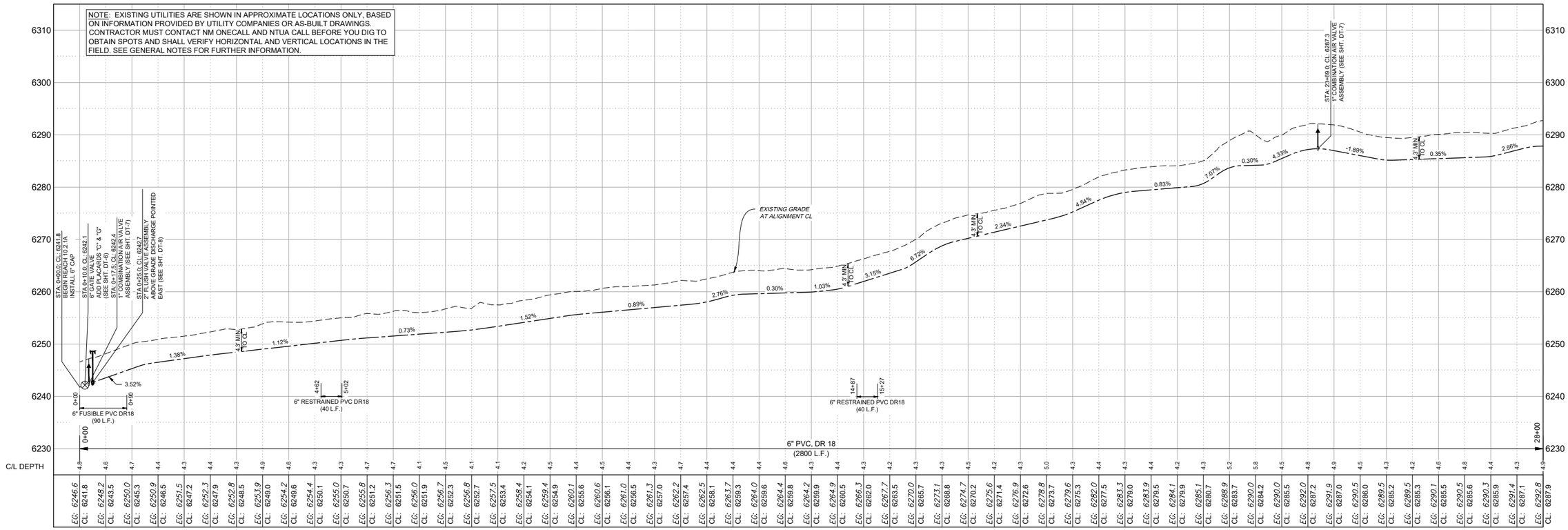


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SITE SPECIFIC REQUIREMENTS INCLUDE:
- AVOIDANCE
- FLAGGING OF SITE BOUNDARIES BY OWNER-PROVIDED ARCHAEOLOGIST
- FENCING
- MONITORING

PLAN VIEW
6" WATERLINE

NOTE: EXISTING UTILITIES ARE SHOWN IN APPROXIMATE LOCATIONS ONLY, BASED ON INFORMATION PROVIDED BY UTILITY COMPANIES OR AS-BUILT DRAWINGS. CONTRACTOR MUST CONTACT NM ONECALL AND NTUA CALL BEFORE YOU DIG TO OBTAIN SPOTS AND SHALL VERIFY HORIZONTAL AND VERTICAL LOCATIONS IN THE FIELD. SEE GENERAL NOTES FOR FURTHER INFORMATION.



PROFILE VIEW
6" WATERLINE

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Client: The Navajo Nation
Location: Standing Rock, NM

PLAN AND PROFILE STA 00+00 To STA 28+00
NAVAJO GALLUP WATER SUPPLY PROJECT
BEACON BISTI N9 - REACH 10.2.1
McKINLEY COUNTY, NEW MEXICO
SECTION 10 AND 15, T. 18 N., R. 15 W.

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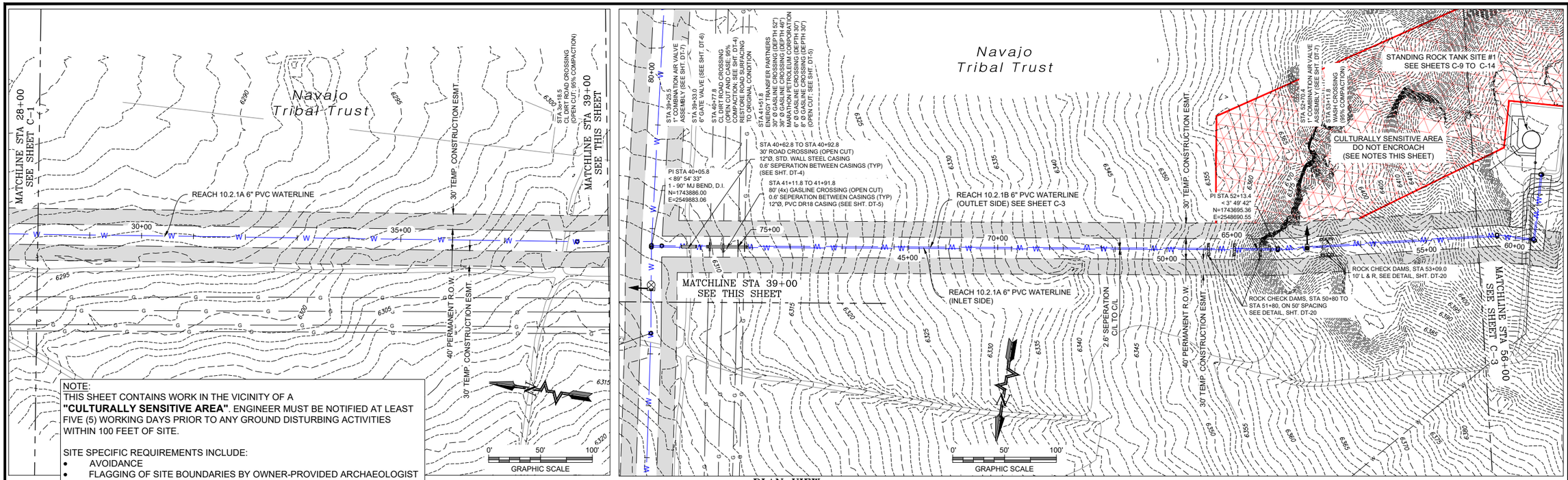
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Date: February 2023
Scale: Horiz: 1" = 100'
Vert: 1" = 10'
Project No: 6922268
Sheet: C-1

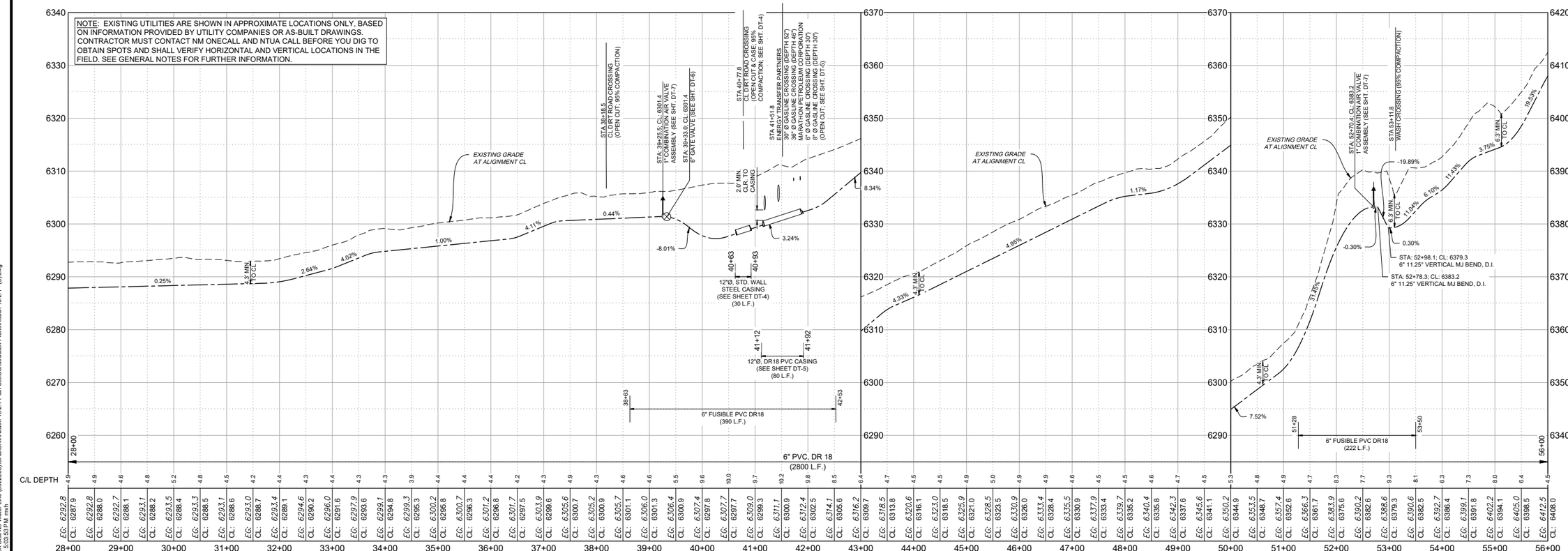
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SITE SPECIFIC REQUIREMENTS INCLUDE:
- AVOIDANCE
- FLAGGING OF SITE BOUNDARIES BY OWNER-PROVIDED ARCHAEOLOGIST

PLAN VIEW
6" WATERLINE



PROFILE VIEW
6" WATERLINE

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Revision | Date | Description | By | Chk'd

Client: The Navajo Nation
Location: Standing Rock, NM

PLAN AND PROFILE STA 28+00 To STA 56+00
NAVAJO GALLUP WATER SUPPLY PROJECT
BEACON BISTI N9 - REACH 10.2.1
McKINLEY COUNTY, NEW MEXICO
SECTION 15, T. 18 N., R. 15 W.

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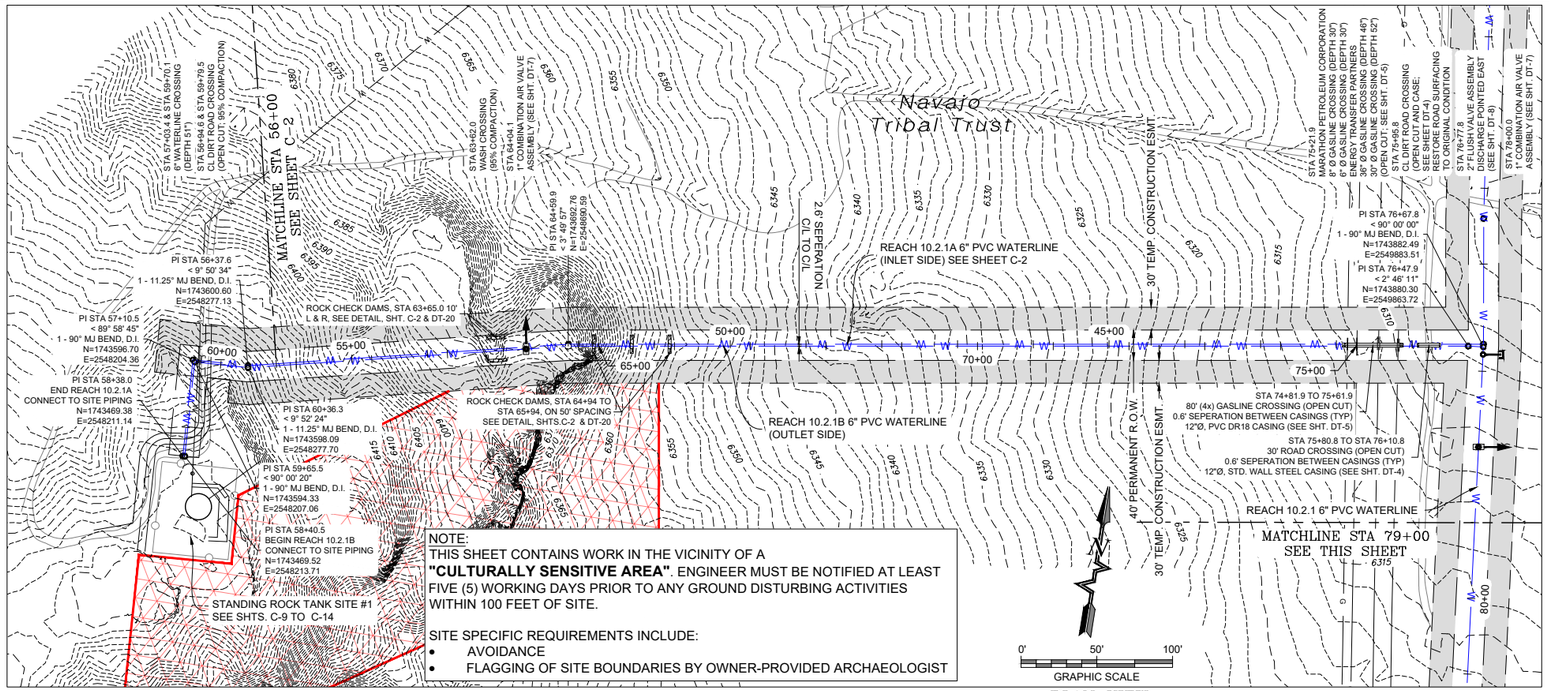
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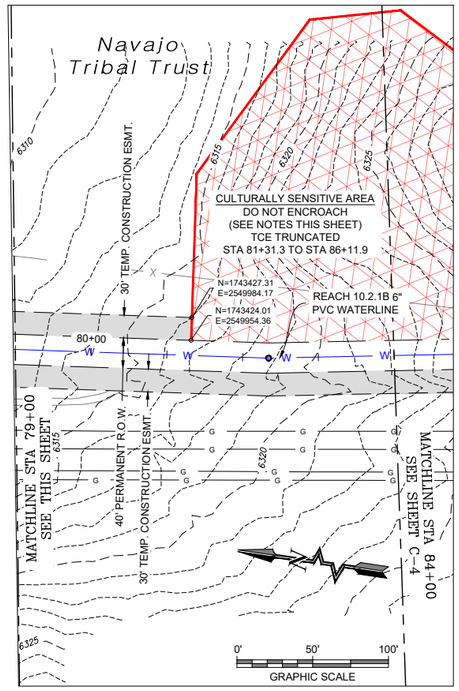
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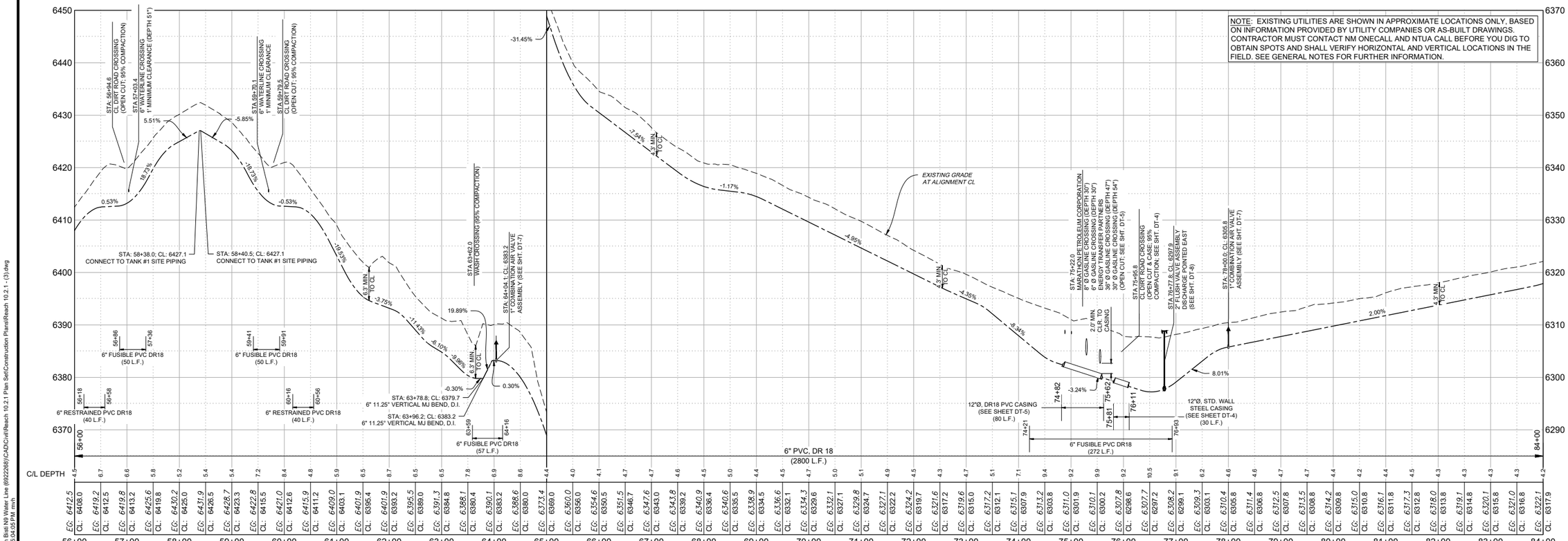
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PLAN VIEW
6" WATERLINE





PROFILE VIEW
6" WATERLINE

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Client: The Navajo Nation
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PLAN AND PROFILE STA 56+00 To STA 84+00
NAVAJO GALLUP WATER SUPPLY PROJECT
BEACON BISTI N9 - REACH 10.2.1
McKINLEY COUNTY, NEW MEXICO
SECTION 15, T. 18 N., R. 15 W.

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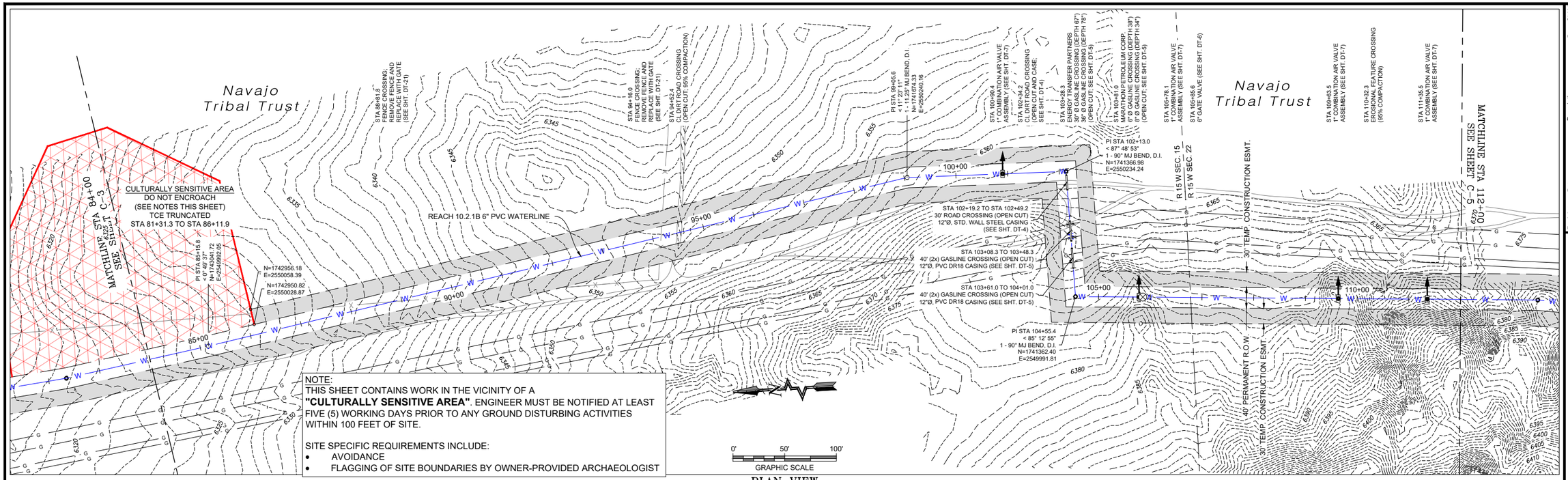
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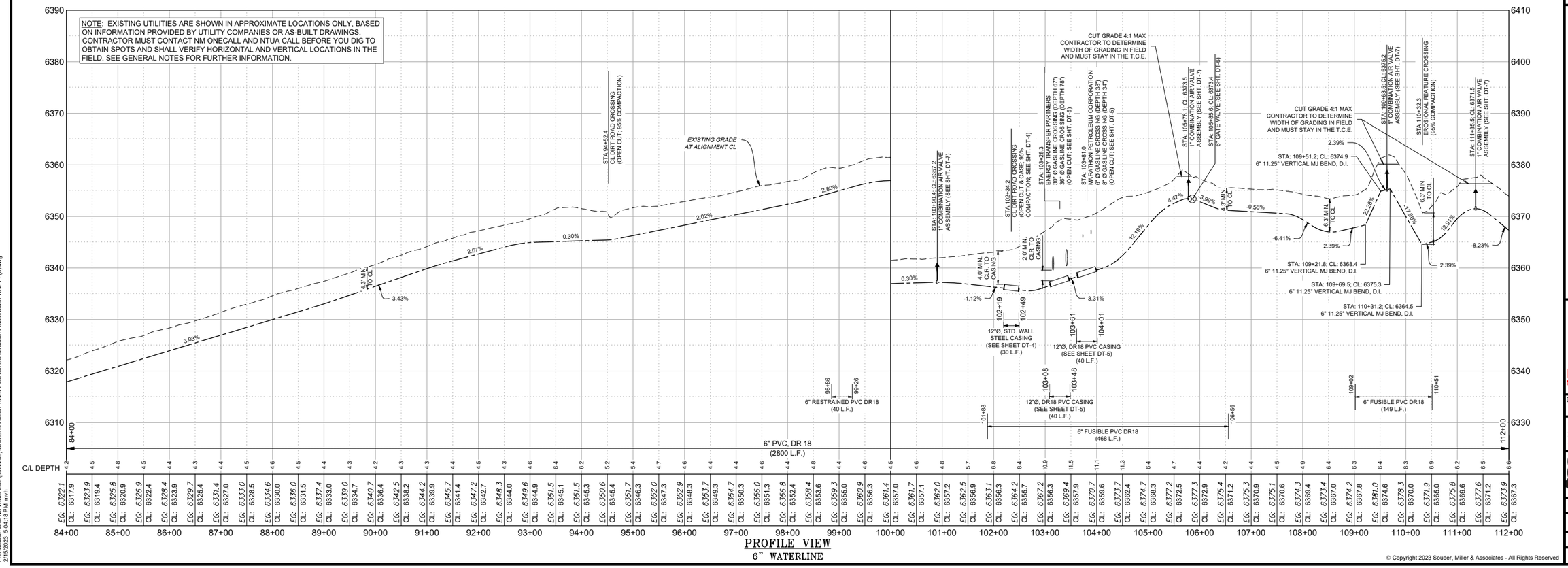
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PLAN VIEW
6" WATERLINE

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- FLAGGING OF SITE BOUNDARIES BY OWNER-PROVIDED ARCHAEOLOGIST



PROFILE VIEW
6" WATERLINE

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PLAN AND PROFILE STA 84+00 To STA 112+00
NAVAJO GALLUP WATER SUPPLY PROJECT
BEACON BISTI N9 - REACH 10.2.1
McKINLEY COUNTY, NEW MEXICO
SECTION 15 AND 22, T. 18 N., R. 15 W.

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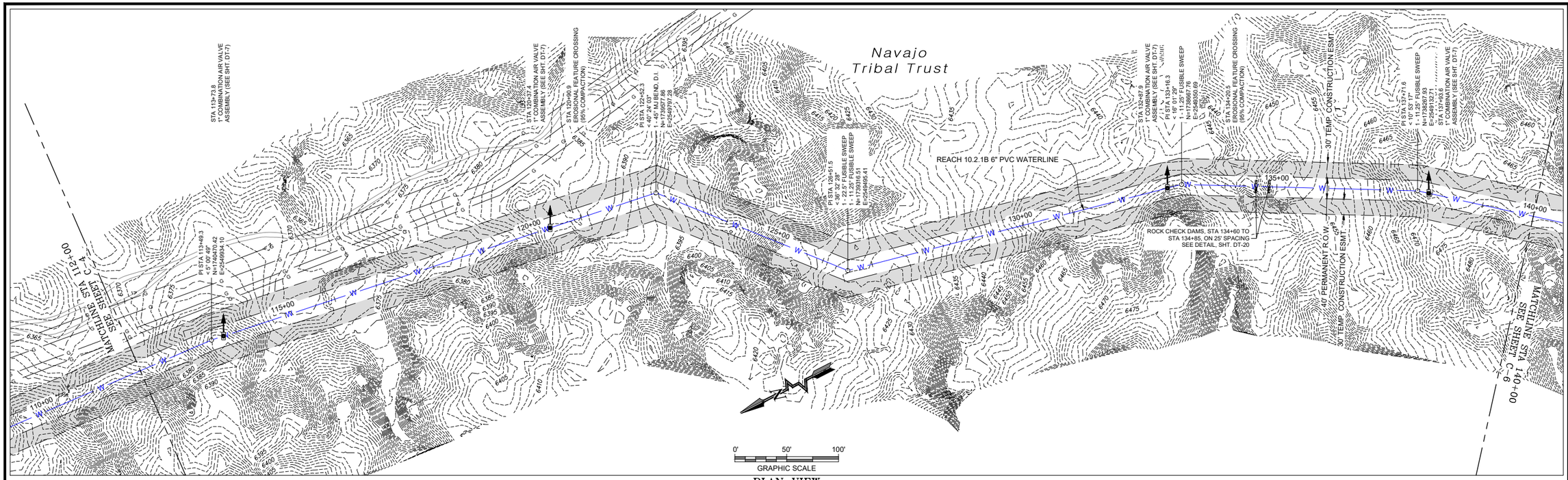
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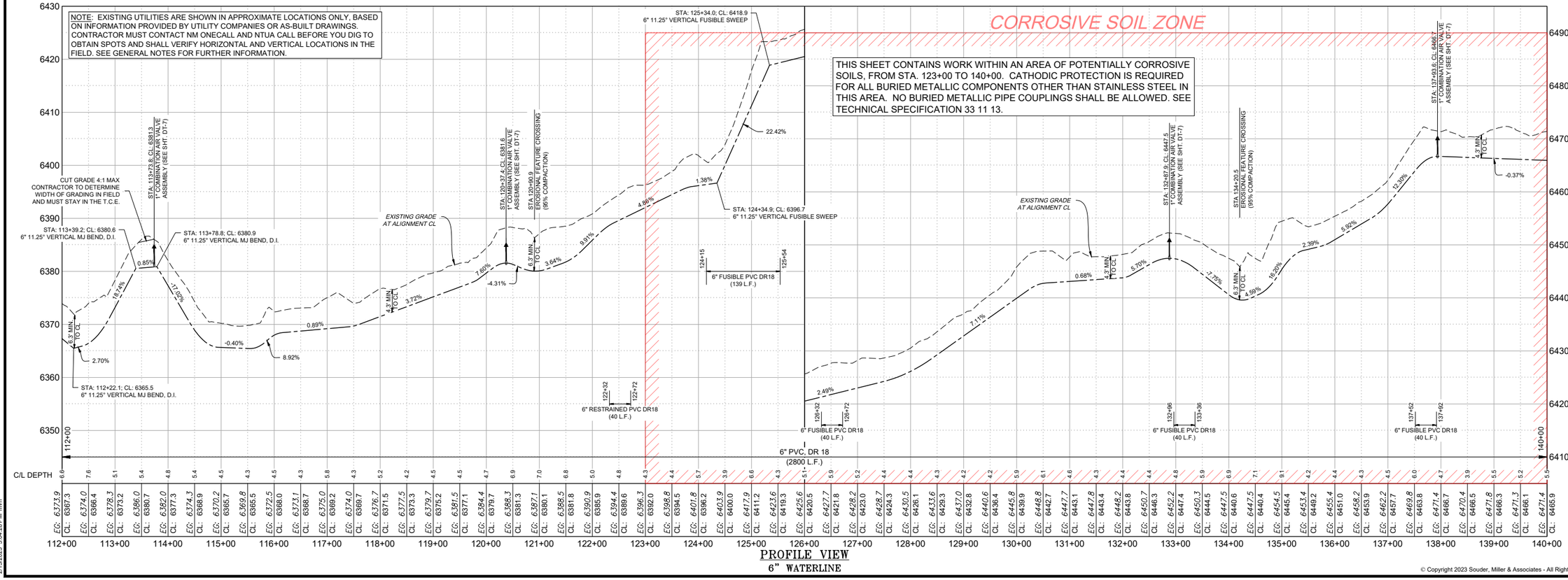
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PLAN VIEW
6" WATERLINE



PROFILE VIEW
6" WATERLINE

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Location: Standing Rock, NM

PLAN AND PROFILE STA 112+00 To STA 140+00
NAVAJO GALLUP WATER SUPPLY PROJECT
BEACON BISTI N9 - REACH 10.2.1
McKINLEY COUNTY, NEW MEXICO
SECTION 22, T. 18 N., R. 15 W.

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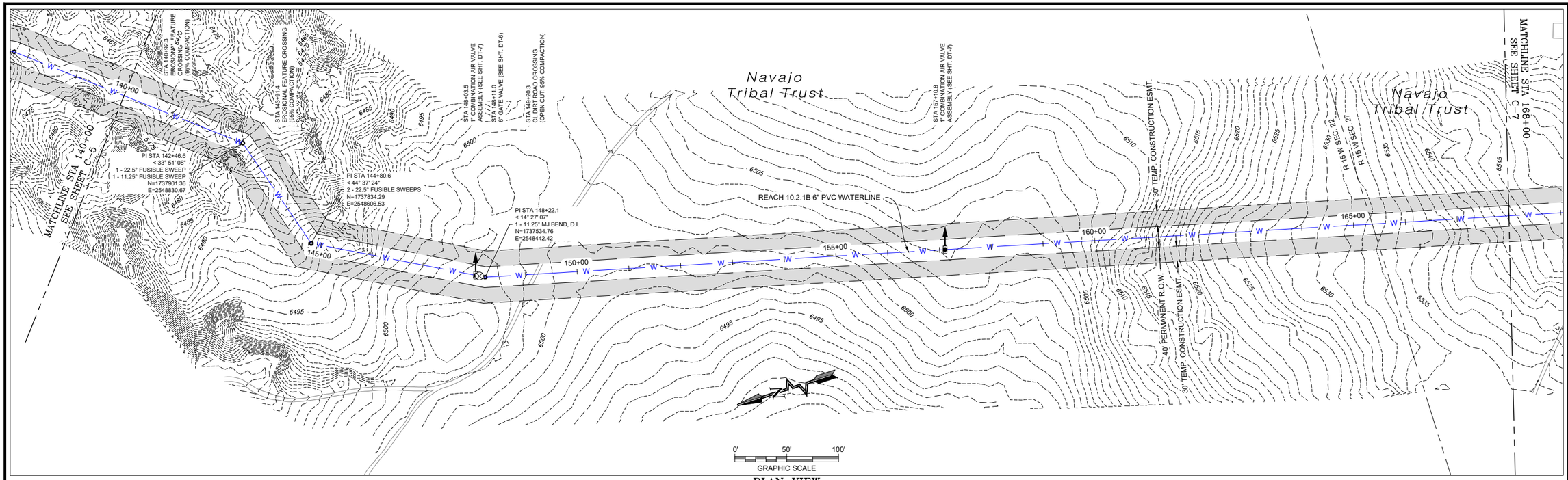
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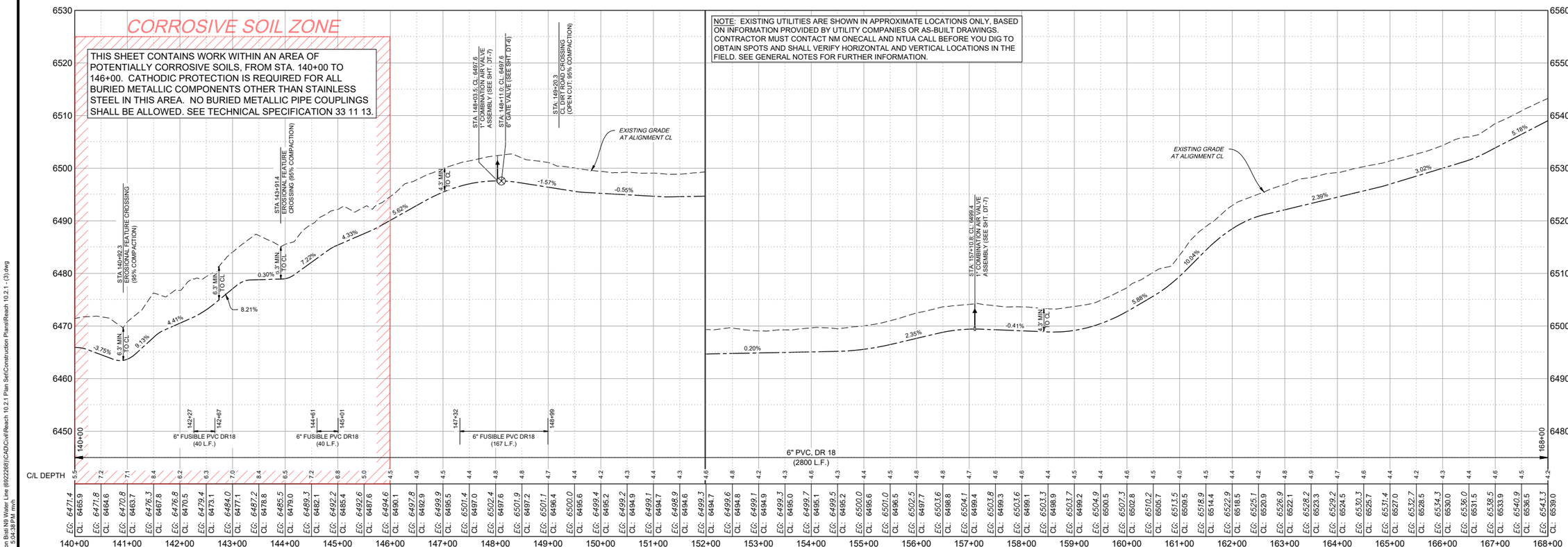
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PLAN VIEW
6" WATERLINE



PROFILE VIEW
6" WATERLINE

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Client: The Navajo Nation Location: Standing Rock, NM

PLAN AND PROFILE STA 140+00 To STA 168+00
NAVAJO GALLUP WATER SUPPLY PROJECT
BEACON BISTI N9 - REACH 10.2.1
McKINLEY COUNTY, NEW MEXICO
SECTION 22 AND 27, T. 18 N., R. 15 W.

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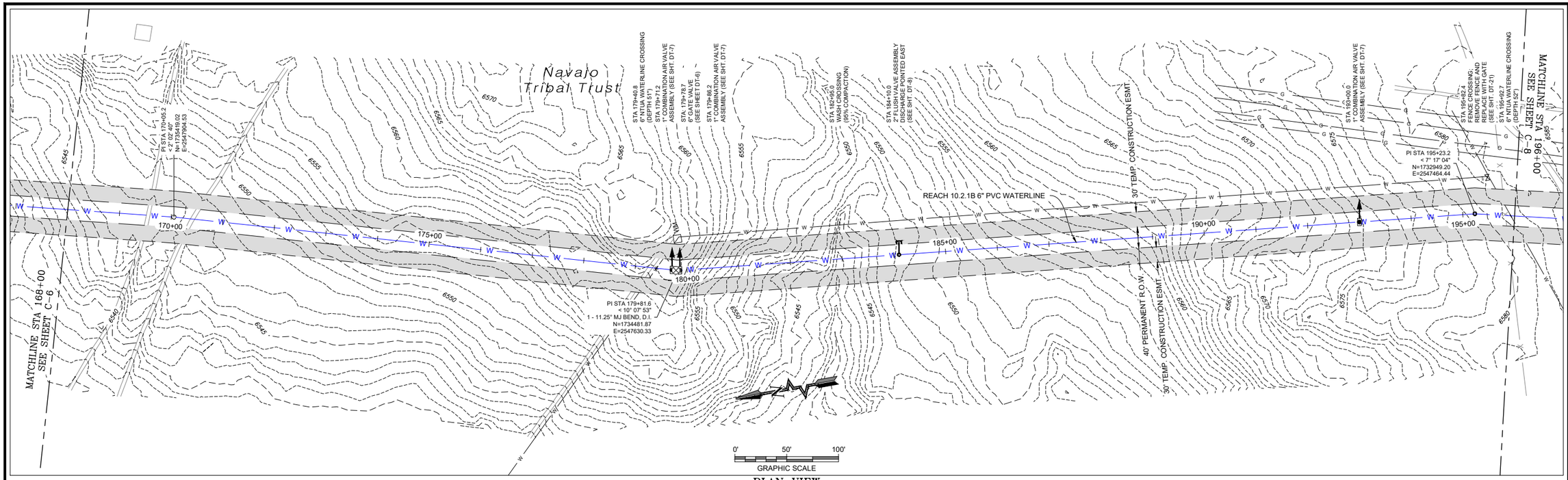
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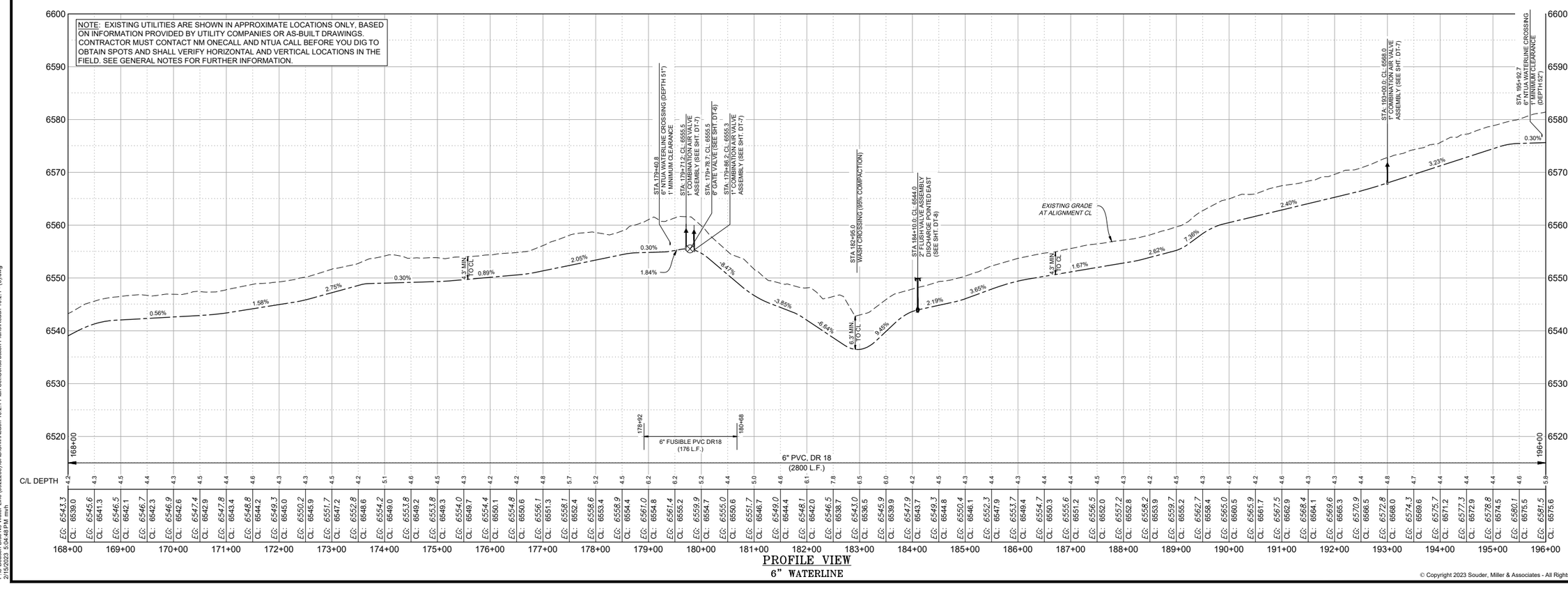
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PLAN VIEW
6" WATERLINE



PROFILE VIEW
6" WATERLINE

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Client: The Navajo Nation
Location: Standing Rock, NM

PLAN AND PROFILE STA 168+00 To STA 196+00
NAVAJO GALLUP WATER SUPPLY PROJECT
BEACON BISTI N9 - REACH 10.2.1
McKINLEY COUNTY, NEW MEXICO
SECTION 27, T. 18 N., R. 15 W.

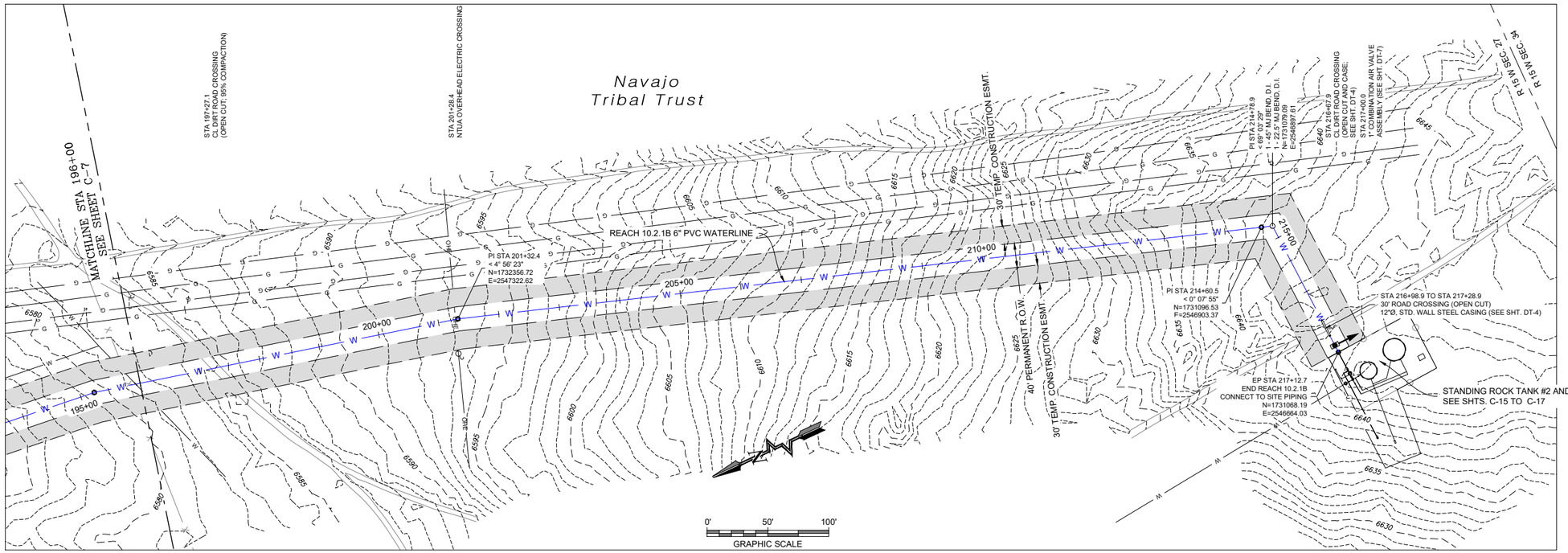
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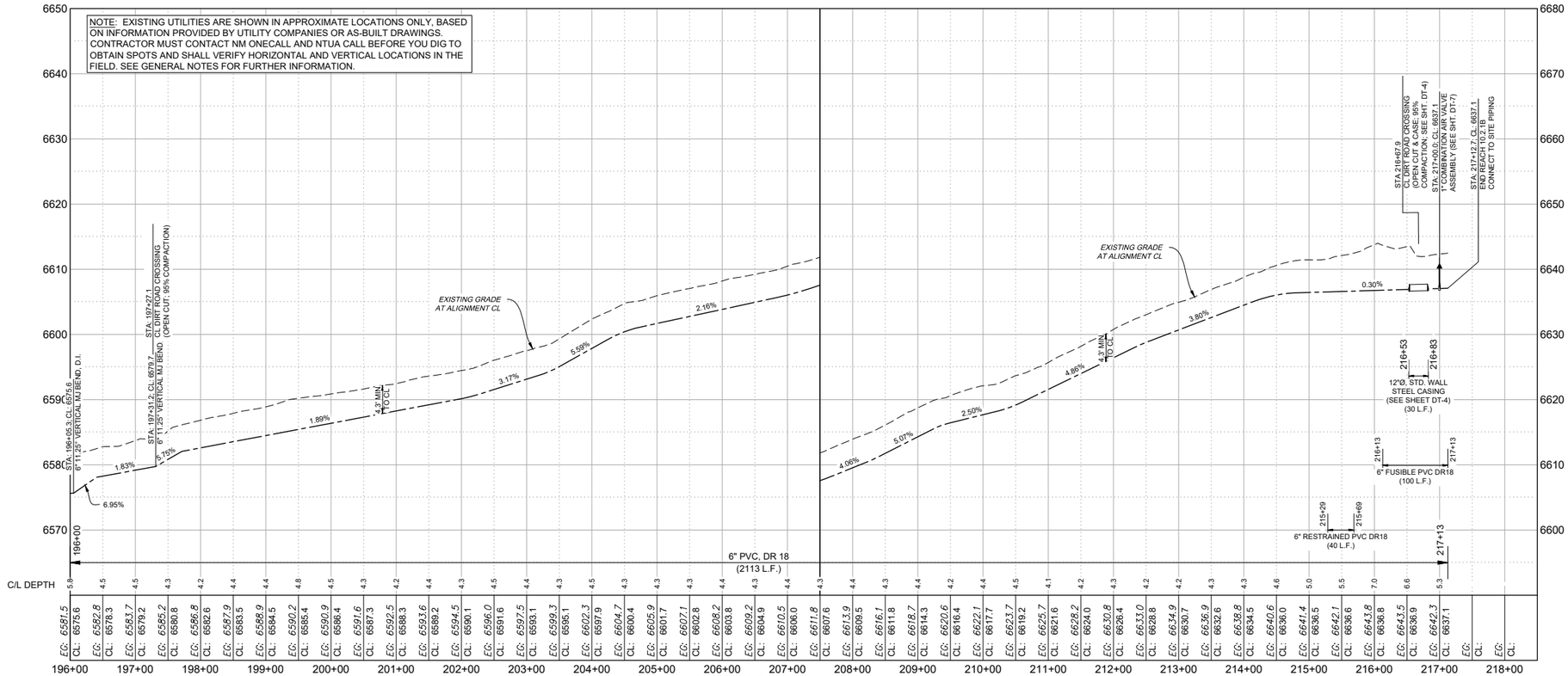
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PLAN VIEW
6" WATERLINE



PROFILE VIEW
6" WATERLINE

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McKINLEY COUNTY, NEW MEXICO
SECTION 27, T. 18 N., R. 15 W.

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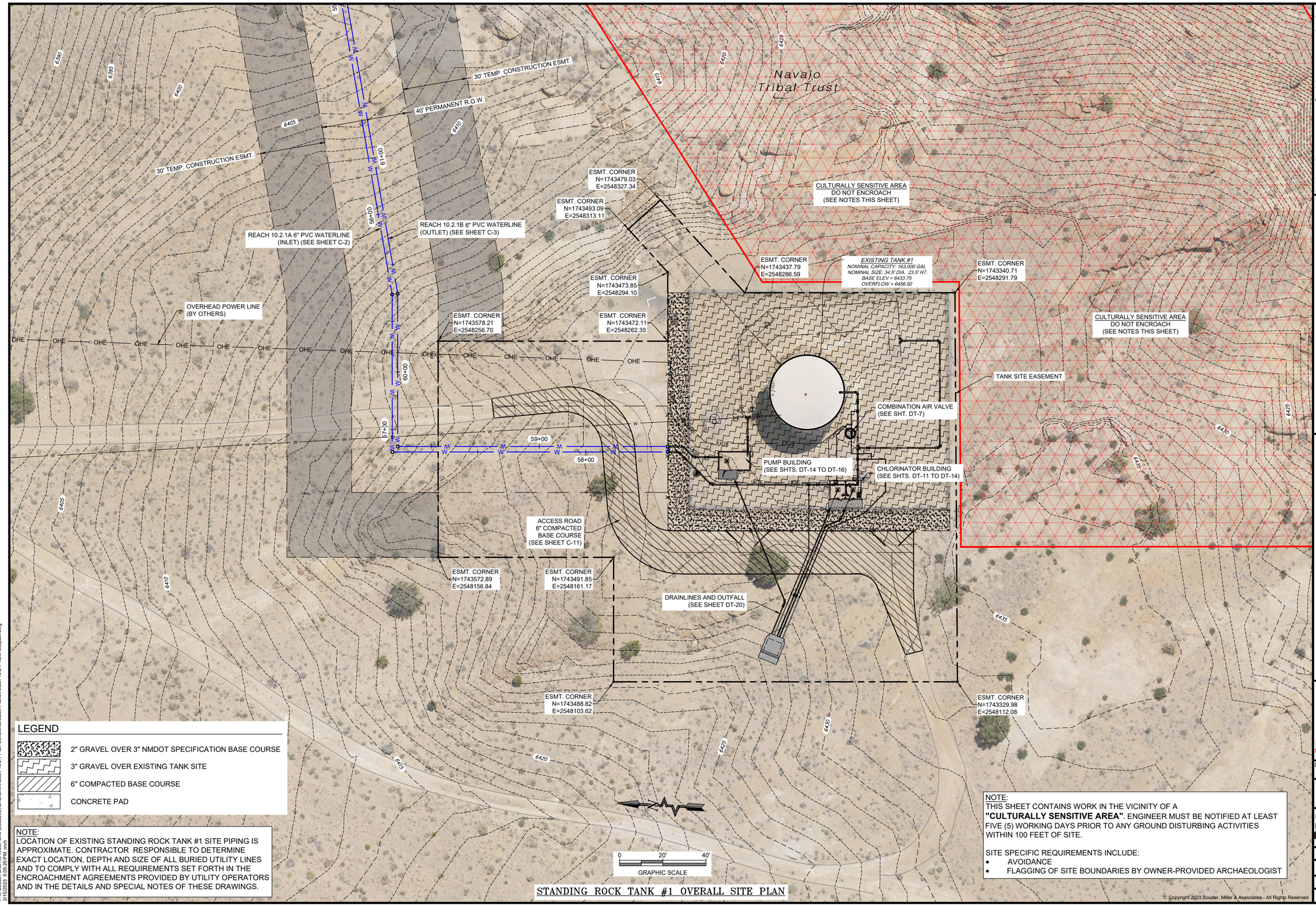
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LEGEND

- 2" GRAVEL OVER 3" NMDOT SPECIFICATION BASE COURSE
- 3" GRAVEL OVER EXISTING TANK SITE
- 6" COMPACTED BASE COURSE
- CONCRETE PAD

NOTE:
LOCATION OF EXISTING STANDING ROCK TANK #1 SITE PIPING IS APPROXIMATE. CONTRACTOR RESPONSIBLE TO DETERMINE EXACT LOCATION, DEPTH AND SIZE OF ALL BURIED UTILITY LINES AND TO COMPLY WITH ALL REQUIREMENTS SET FORTH IN THE ENCROACHMENT AGREEMENTS PROVIDED BY UTILITY OPERATORS AND IN THE DETAILS AND SPECIAL NOTES OF THESE DRAWINGS.

NOTE:
THIS SHEET CONTAINS WORK IN THE VICINITY OF A **"CULTURALLY SENSITIVE AREA"**. ENGINEER MUST BE NOTIFIED AT LEAST FIVE (5) WORKING DAYS PRIOR TO ANY GROUND DISTURBING ACTIVITIES WITHIN 100 FEET OF SITE.

SITE SPECIFIC REQUIREMENTS INCLUDE:
- AVOIDANCE
- FLAGGING OF SITE BOUNDARIES BY OWNER-PROVIDED ARCHAEOLOGIST

STANDING ROCK TANK #1 OVERALL SITE PLAN

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BEACON BISTI N9 - REACH 10.2.1
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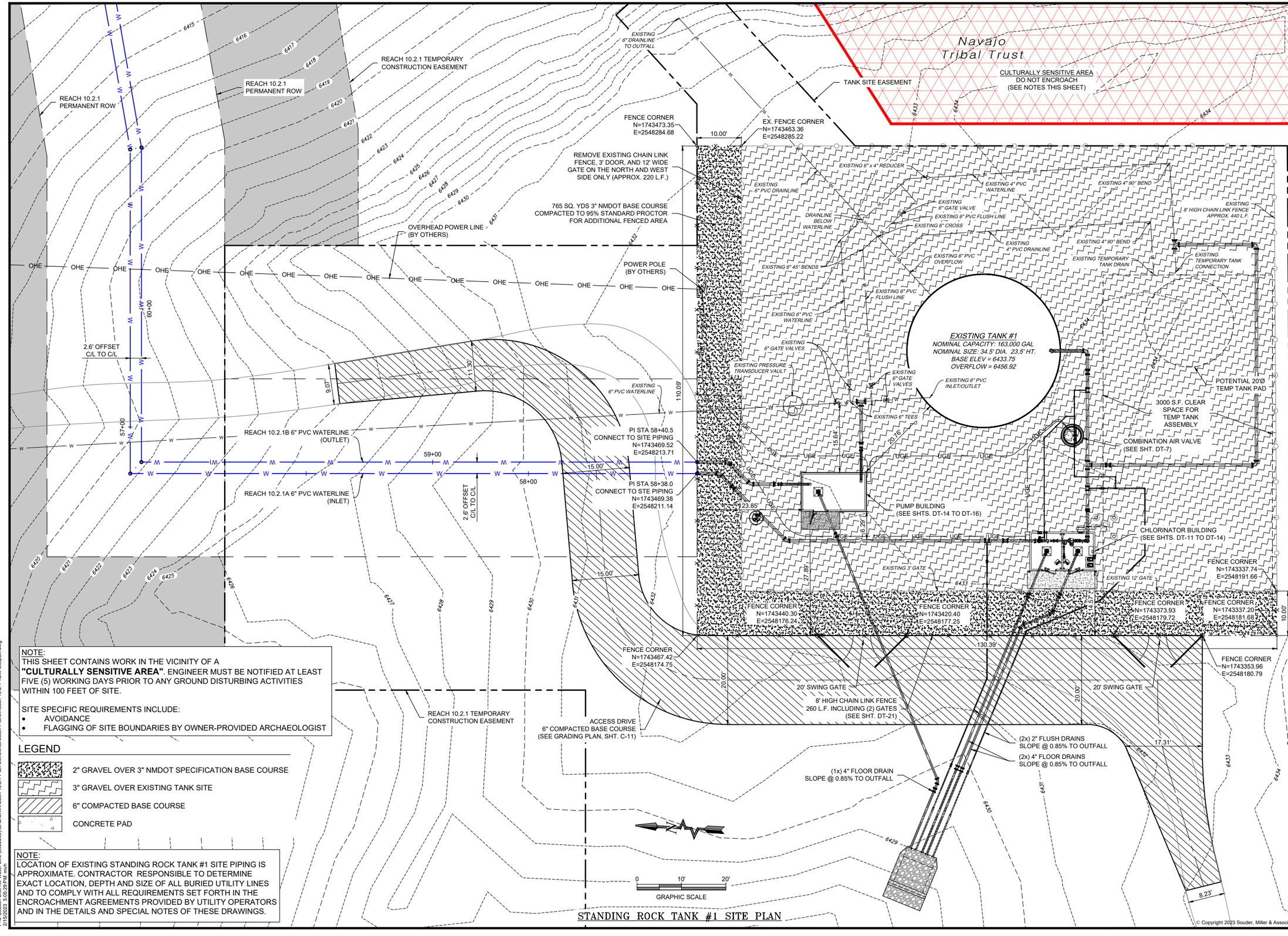
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LEGEND

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- 3" GRAVEL OVER EXISTING TANK SITE
- 6" COMPACTED BASE COURSE
- CONCRETE PAD

NOTE:
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STANDING ROCK TANK #1 SITE PLAN

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BEACON BISTI N9 - REACH 10.2.1
McKINLEY COUNTY, NEW MEXICO
SECTION 15, T. 18 N., R. 15 W.

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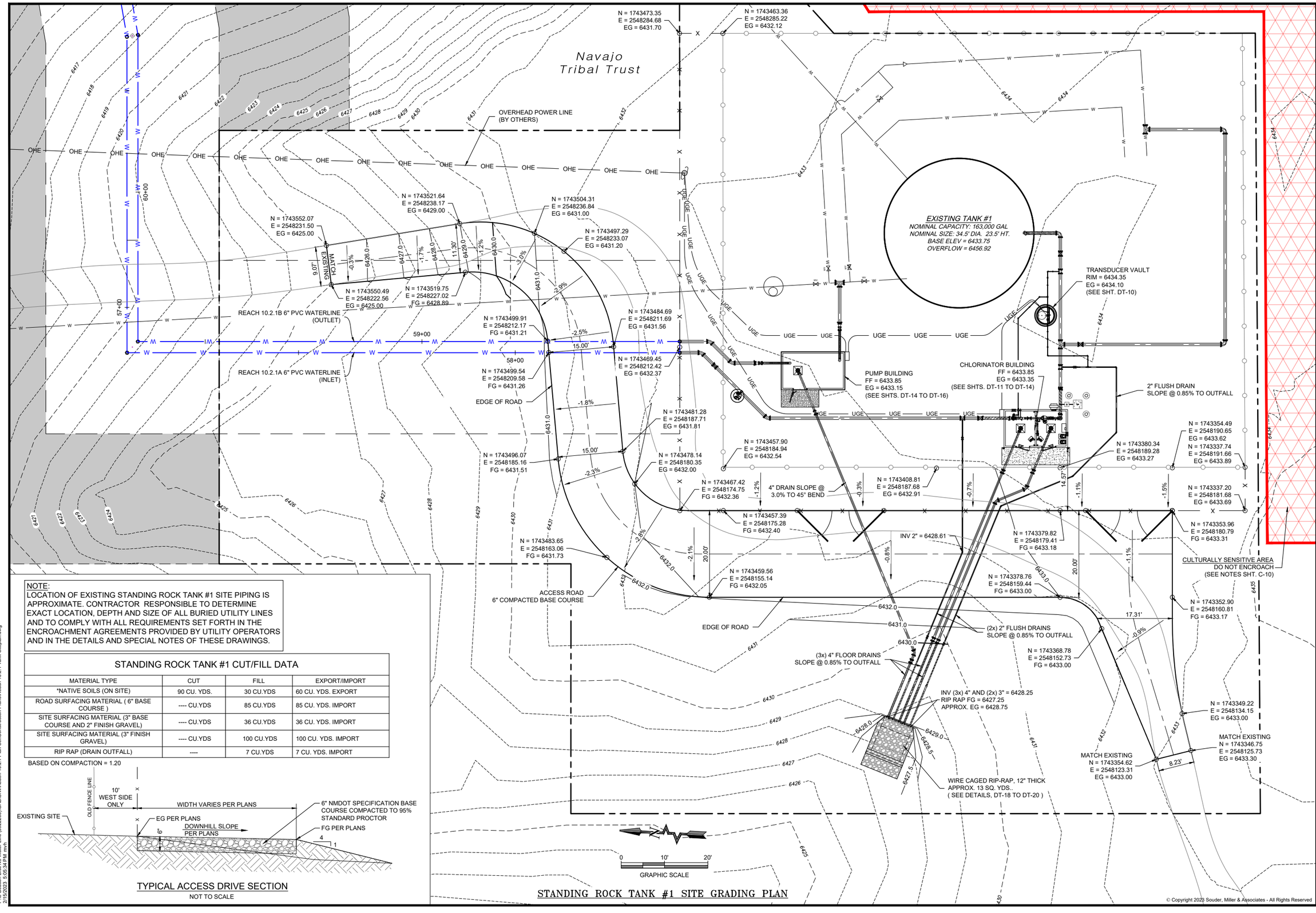
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STANDING ROCK TANK #1 CUT/FILL DATA

MATERIAL TYPE	CUT	FILL	EXPORT/IMPORT
*NATIVE SOILS (ON SITE)	90 CU. YDS.	30 CU.YDS	60 CU. YDS. EXPORT
ROAD SURFACING MATERIAL (6" BASE COURSE)	---- CU.YDS	85 CU.YDS	85 CU. YDS. IMPORT
SITE SURFACING MATERIAL (3" BASE COURSE AND 2" FINISH GRAVEL)	---- CU.YDS	36 CU.YDS	36 CU. YDS. IMPORT
SITE SURFACING MATERIAL (3" FINISH GRAVEL)	---- CU.YDS	100 CU.YDS	100 CU. YDS. IMPORT
RIP RAP (DRAIN OUTFALL)	----	7 CU.YDS	7 CU. YDS. IMPORT

BASED ON COMPACTION = 1.20

TYPICAL ACCESS DRIVE SECTION
NOT TO SCALE

0 10' 20'
GRAPHIC SCALE

STANDING ROCK TANK #1 SITE GRADING PLAN

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STANDING ROCK TANK #1 SITE GRADING PLAN
NAVAJO GALLUP WATER SUPPLY PROJECT
BEACON BISTI N9 - REACH 10.2.1
McKINLEY COUNTY, NEW MEXICO
SECTION 15, T. 18 N., R. 15 W.

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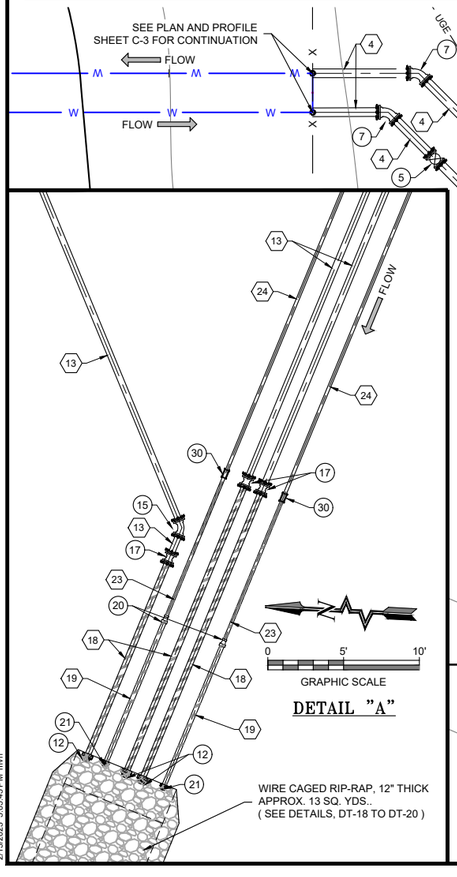
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KEYED NOTES - STANDING ROCK TANK #1 SITE

Item No.	Description
1	1" COMBINATION AIR RELEASE VALVE (SEE DETAIL DT-7)
2	6" STEEL PIPE, STANDARD WALL, WITH POLYMIDE EPOXY PER SPECIFICATIONS
3	6" 90° BEND, WELDED STEEL
4	6" PVC DR18 C900 PIPE
5	6" MJ x MJ GATE VALVE (SEE DETAIL DT-6) 350 psi
6	6" x 2" MJ x MJ TAPPED TEE, D.I.
7	6" MJ x MJ 45° BEND, D.I. 350 psi
8	6" DUCTILE IRON PIPE
9	6" MJ x MJ 90° BEND, D.I. 350 psi
10	6" MJ x MJ BUTTERFLY VALVE WITH GEARED ACTUATOR, AUMA GS100.3, 208:1 REDUCTION RATIO, 250 psi, WITH LOCKING METER CAN AND WARNING PLACARD (SEE DETAILS "B" & "C" (SEE DETAIL DT-6)
11	6" MJ x MJ TEE, D.I. 350 psi
12	4" CAST IRON FLAP VALVE (SEE DETAIL DT-19)
13	4" PVC C900 DR18 PIPE
14	4" DUCTILE IRON PIPE
15	4" MJ x MJ 45° BEND, D.I.
16	4" MJ x MJ 90° BEND, D.I.
17	4" MJ X MJ SHORT SLEEVE, D.I.
18	4" FL x PE DUCTILE IRON PIPE
19	3" G.I. PIPE, STANDARD WALL, NPT
20	3" x 2" G.I. REDUCER, NPT
21	3" CAST IRON FLAP VALVE (SEE DETAIL DT-20)
22	2" MALE x 1" FEMALE REDUCING BUSHING, NPT, SS 304
23	2" G.I. PIPE, STANDARD WALL, NPT
24	2" PVC, SDR-21, 200 psi
25	2" MUELLER GATE VALVE, NPT 350 psi OAE
26	2" 90° BEND, PVC
27	2" 45° BEND, PVC
28	2" 22.5° BEND, PVC
29	2" x 1" THREADED TEE NPT, PVC
30	2" DRESSER COUPLING
31	2" ADAPTER, PVC, SLIP-GASKET x NPT, SDR-21, 200 psi
32	1" YARD HYDRANT ASSEMBLY (SEE DETAIL SHEET DT-9)
33	1" STEEL PIPE, NPT, SS 304
34	1" MUELLER 300 BALL CURB VALVE, 300 psi OAE (SEE DETAIL DT-9)
35	1" 90° BEND, NPT, SS 304
36	1" DRESSER COUPLING
37	1" 45° BEND, NPT, SS 304
38	1" TEE, NPT, SS 304
39	PRESSURE TRANSDUCER VAULT (SEE DETAIL DT-10)
40	6" MJ FLANGE ADAPTER, FBE-COATED WITH SS 304 BOLTS, MEGAFLANGE SERIES 2100, 235 psi, OAE
41	6" x 4" FL x FL REDUCER, D.I.
42	4" STEEL PIPE, STANDARD WALL, WITH POLYMIDE EPOXY PER SPECIFICATIONS
43	4" 90° BEND, WELDED STEEL
44	4" ANSI CLASS 125/150 WELDED FLANGE
45	4" FL x FL GATE VALVE (SEE DETAIL DT-6) 350 psi



STANDING ROCK TANK #1 SITE PIPING PLAN

DETAIL "A"

NOTES:

1. NO HIGH SPOTS PERMITTED ON SITE PIPING. ALL SITE PIPING SHALL SLOPE UP TOWARDS VACUUM BREAKER / AIR RELEASE VALVE VAULT OR TANKS (MIN. 1%).
2. ALL MATERIALS, FITTINGS AND APPURTENANCES SHALL BE RATED TO AT LEAST 235 psi, UNLESS OTHERWISE NOTED.
3. ALL PIPE AND FITTINGS UNDERNEATH AND WITHIN 5' OF BUILDING FOUNDATIONS SHALL BE DUCTILE IRON AND SHALL BE SHOP X-RAY TESTED AND PRESSURE TESTED PRIOR TO PLACING FOUNDATIONS.
4. ALL VALVES AT BUILDING SHALL BE LOCATED AT LEAST 5' FROM EDGES OF FOUNDATIONS.
5. ALL BURIED NON-STAINLESS STEEL PIPE AND FITTINGS SHALL BE COLD-APPLIED TAPE-WRAPPED, PER SPECIFICATIONS.
6. ALL BURIED DUCTILE IRON PIPE AND ALL DUCTILE IRON FITTINGS SHALL BE DOUBLE-WRAPPED POLYETHYLENE, PER SPECIFICATIONS. INNER JACKET SHALL BE V-BIO ENHANCED, MIN. 8-MIL. OUTER JACKET SHALL BE STANDARD PE, MIN. 8-MIL. DUCTILE IRON RISERS UNDER CHLORINATION BUILDING SHALL BE COLD-APPLIED TAPE-WRAPPED, PER SPECIFICATIONS.
7. ALL BURIED DUCTILE IRON FITTINGS SHALL BE MJ. ALL BURIED DUCTILE IRON PIPES SHALL BE SOLID PIECES. NO DUCTILE IRON PIPE JOINTS ALLOWED.
8. ALL PRESSURE BEARING PIPES WITHIN SITE SHALL BE FULLY RESTRAINED. ALL PVC PIPE JOINTS SHALL BE FUSED. REFER TO DETAIL, SHEET DT-3.
9. FIELD LOCATE CONDUITS PER REVIEW WITH ELECTRICIAN.

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Location: Standing Rock, NM

STANDING ROCK TANK #1 SITE PIPING PLAN
NAVAJO GALLUP WATER SUPPLY PROJECT
BEACON BISTI N9 - REACH 10.2.1
McKINLEY COUNTY, NEW MEXICO
SECTION 15, T. 18 N., R. 15 W.

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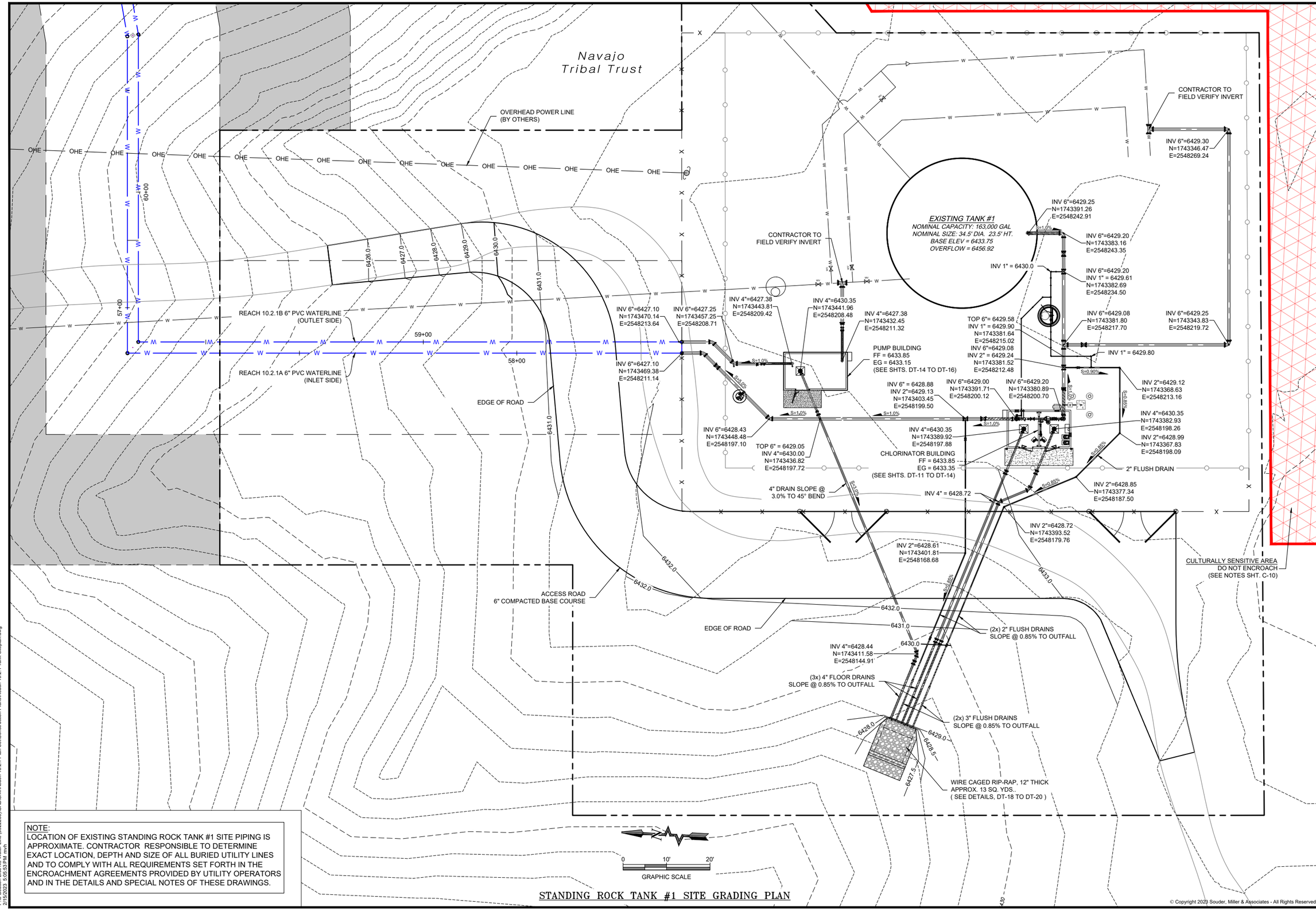
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0 10' 20'
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STANDING ROCK TANK #1 SITE GRADING PLAN

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STANDING ROCK TANK #1 SITE PIPE INVERTS
NAVAJO GALLUP WATER SUPPLY PROJECT
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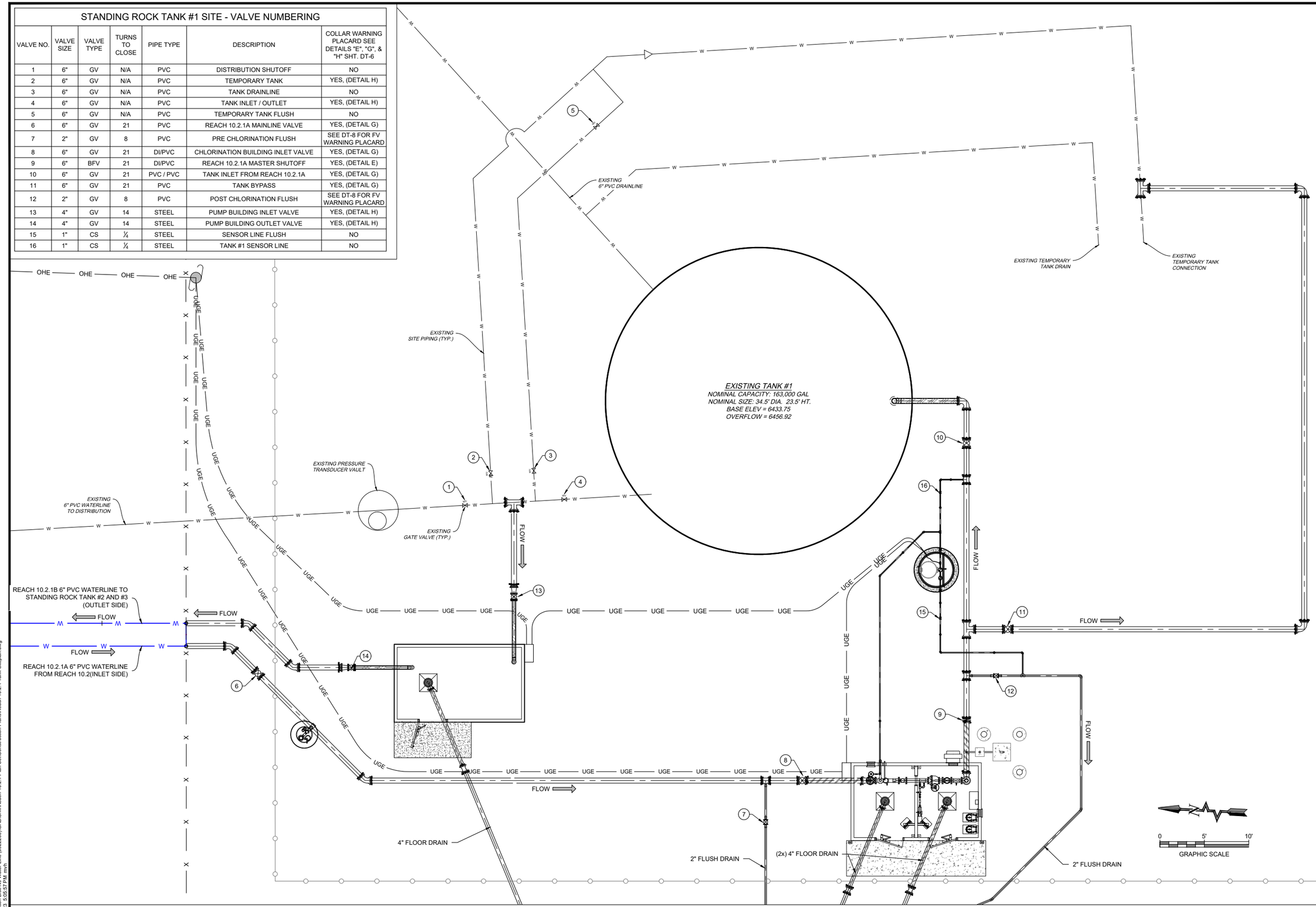
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STANDING ROCK TANK #1 SITE - VALVE NUMBERING

VALVE NO.	VALVE SIZE	VALVE TYPE	TURNS TO CLOSE	PIPE TYPE	DESCRIPTION	COLLAR WARNING PLACARD SEE DETAILS "E", "G", & "H" SHT. DT-6
1	6"	GV	N/A	PVC	DISTRIBUTION SHUTOFF	NO
2	6"	GV	N/A	PVC	TEMPORARY TANK	YES, (DETAIL H)
3	6"	GV	N/A	PVC	TANK DRAINLINE	NO
4	6"	GV	N/A	PVC	TANK INLET / OUTLET	YES, (DETAIL H)
5	6"	GV	N/A	PVC	TEMPORARY TANK FLUSH	NO
6	6"	GV	21	PVC	REACH 10.2.1A MAINLINE VALVE	YES, (DETAIL G)
7	2"	GV	8	PVC	PRE CHLORINATION FLUSH	SEE DT-8 FOR FV WARNING PLACARD
8	6"	GV	21	DI/PVC	CHLORINATION BUILDING INLET VALVE	YES, (DETAIL G)
9	6"	BFV	21	DI/PVC	REACH 10.2.1A MASTER SHUTOFF	YES, (DETAIL E)
10	6"	GV	21	PVC / PVC	TANK INLET FROM REACH 10.2.1A	YES, (DETAIL G)
11	6"	GV	21	PVC	TANK BYPASS	YES, (DETAIL G)
12	2"	GV	8	PVC	POST CHLORINATION FLUSH	SEE DT-8 FOR FV WARNING PLACARD
13	4"	GV	14	STEEL	PUMP BUILDING INLET VALVE	YES, (DETAIL H)
14	4"	GV	14	STEEL	PUMP BUILDING OUTLET VALVE	YES, (DETAIL H)
15	1"	CS	¼	STEEL	SENSOR LINE FLUSH	NO
16	1"	CS	¼	STEEL	TANK #1 SENSOR LINE	NO



STANDING ROCK TANK #1 VALVE NUMBERING PLAN PLAN

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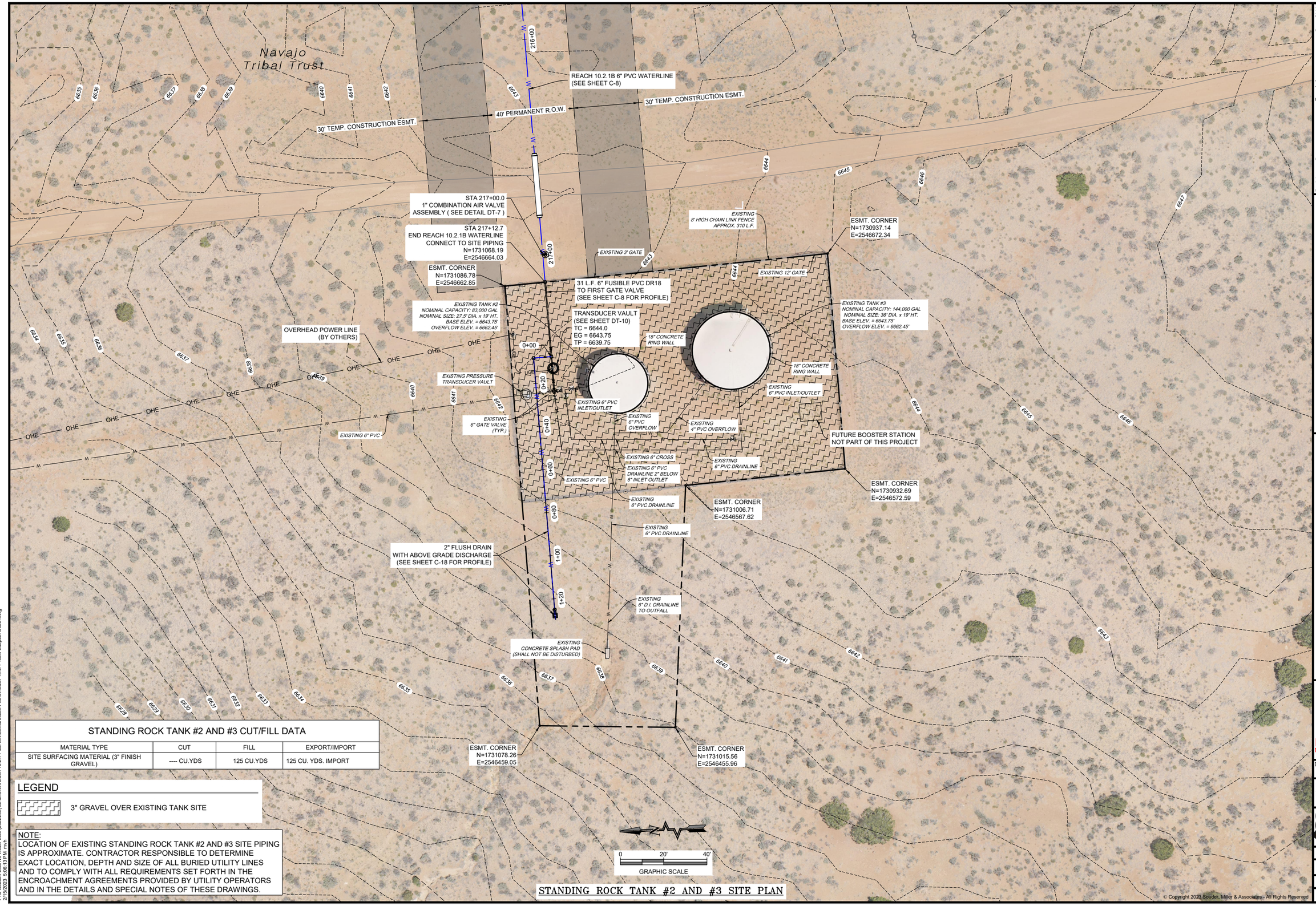
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STANDING ROCK TANK #2 AND #3 CUT/FILL DATA

MATERIAL TYPE	CUT	FILL	EXPORT/IMPORT
SITE SURFACING MATERIAL (3" FINISH GRAVEL)	---- CU.YDS	125 CU.YDS	125 CU. YDS. IMPORT

LEGEND

3" GRAVEL OVER EXISTING TANK SITE

NOTE:
LOCATION OF EXISTING STANDING ROCK TANK #2 AND #3 SITE PIPING IS APPROXIMATE. CONTRACTOR RESPONSIBLE TO DETERMINE EXACT LOCATION, DEPTH AND SIZE OF ALL BURIED UTILITY LINES AND TO COMPLY WITH ALL REQUIREMENTS SET FORTH IN THE ENCROACHMENT AGREEMENTS PROVIDED BY UTILITY OPERATORS AND IN THE DETAILS AND SPECIAL NOTES OF THESE DRAWINGS.

STANDING ROCK TANK #2 AND #3 SITE PLAN

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Client: The Navajo Nation
Location: Standing Rock, NM

STANDING ROCK TANK #2 AND #3 SITE PLAN
NAVAJO GALLUP WATER SUPPLY PROJECT
BEACON BISTI N9 - REACH 10.2.1
McKINLEY COUNTY, NEW MEXICO
SECTION 27, T. 18 N., R. 15 W.

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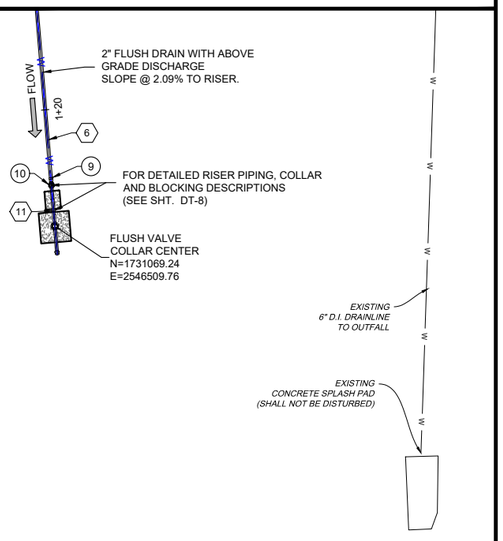
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KEYED NOTES - STANDING ROCK TANK #2 AND #3 SITE

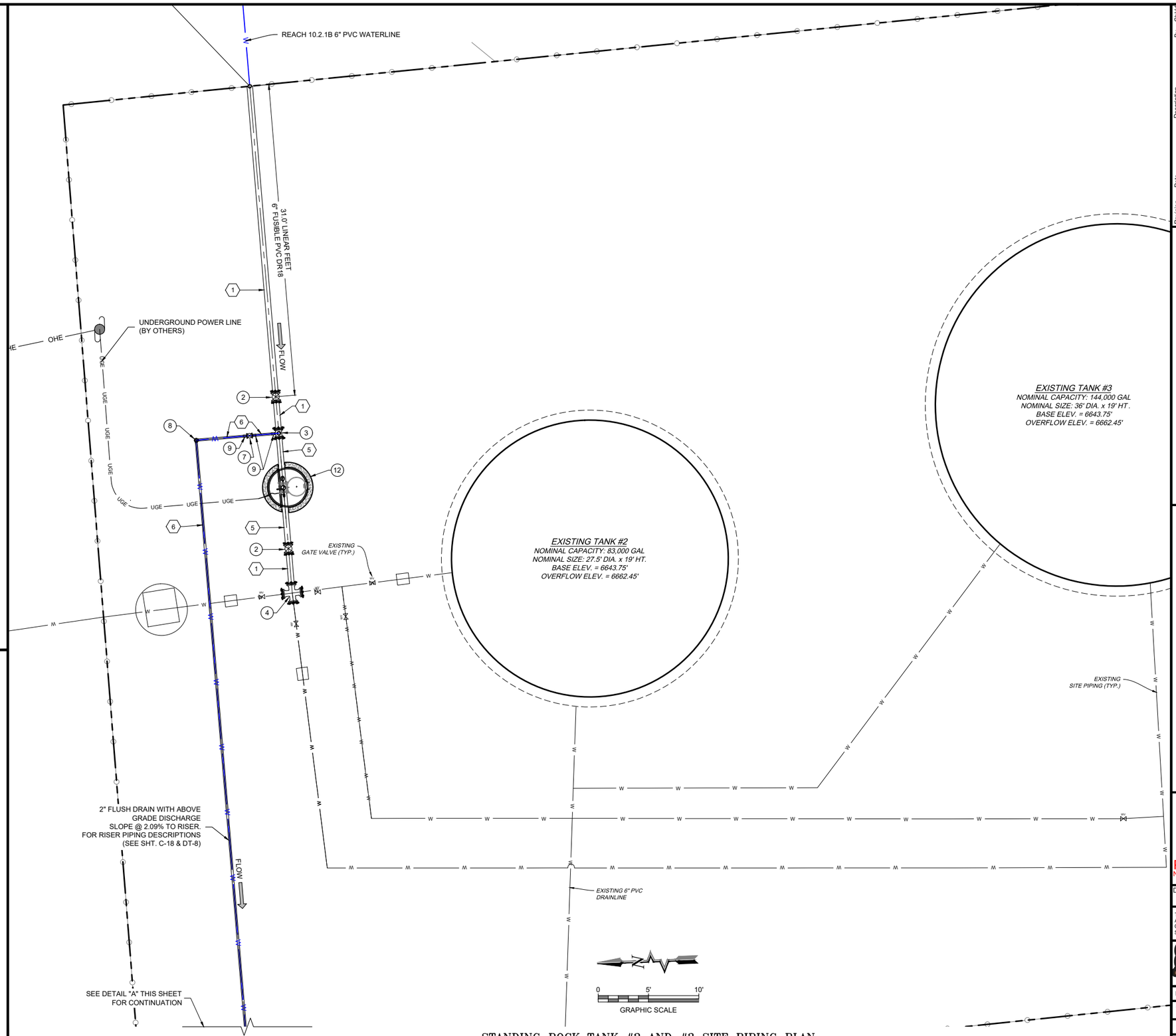
Item No.	Description
1	6" PVC DR18 C900 PIPE
2	6" MJ x MJ GATE VALVE (SEE DETAIL DT-6) 350 psi
3	6" x 2" MJ x MJ TAPPED TEE, D.I.
4	6" MJ x MJ CROSS, D.I. 350 psi
5	6" DUCTILE IRON PIPE
6	2" PVC, SDR-21, 200 psi
7	2" MUELLER GATE VALVE, NPT 350 psi OAE
8	2" 90° BEND, PVC
9	2" ADAPTER, PVC, SLIP-GASKET x NPT, SDR-21, 200 psi
10	2" 45° BEND, G.I.
11	2" G.I. PIPE, STANDARD WALL
12	PRESSURE TRANSDUCER VAULT (SEE DETAIL DT-10)

NOTES:

1. NO HIGH SPOTS PERMITTED ON SITE PIPING. ALL SITE PIPING SHALL SLOPE UP TOWARDS COMBINATION AIR RELEASE VALVE OR TANKS (MIN. 1%).
2. ALL MATERIALS, FITTINGS AND APPURTENANCES SHALL BE RATED TO AT LEAST 235 psi, UNLESS OTHERWISE NOTED.
3. ALL VALVES AT TANKS SHALL BE LOCATED AT LEAST 5' FROM EDGES OF FOUNDATIONS.
4. ALL BURIED NON-STAINLESS STEEL PIPE AND FITTINGS SHALL BE COLD-APPLIED TAPE-WRAPPED, PER SPECIFICATIONS.
5. ALL BURIED DUCTILE IRON PIPE AND ALL DUCTILE IRON FITTINGS SHALL BE DOUBLE-WRAPPED POLYETHYLENE, PER SPECIFICATIONS. INNER JACKET SHALL BE V-BIO ENHANCED, MIN. 8-MIL. OUTER JACKET SHALL BE STANDARD PE, MIN. 8-MIL. DUCTILE IRON RISERS UNDER CHLORINATION BUILDING SHALL BE COLD-APPLIED TAPE-WRAPPED, PER SPECIFICATIONS.
6. ALL BURIED DUCTILE IRON FITTINGS SHALL BE MJ. ALL BURIED DUCTILE IRON PIPES SHALL BE SOLID PIECES. NO DUCTILE IRON PIPE JOINTS ALLOWED.
7. ALL PRESSURE BEARING PIPES WITHIN SITE SHALL BE FULLY RESTRAINED. ALL PVC PIPE JOINTS SHALL BE FUSED. REFER TO DETAIL, SHEET DT-3.
8. INSTALL ADDITIONAL 1" SS 304 FITTINGS AND DRESSER COUPLINGS AS NEEDED TO FACILITATE SENSOR LINE INSTALLATION.
9. FIELD LOCATE CONDUITS PER REVIEW WITH ELECTRICIAN.



DETAIL A



STANDING ROCK TANK #2 AND #3 SITE PIPING PLAN

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Location: Standing Rock, NM

S. R. TANK #2 AND #3 SITE PIPING PLAN
NAVAJO GALLUP WATER SUPPLY PROJECT
BEACON BISTI N9 - REACH 10.2.1
McKINLEY COUNTY, NEW MEXICO
SECTION 27, T. 18 N., R. 15 W.

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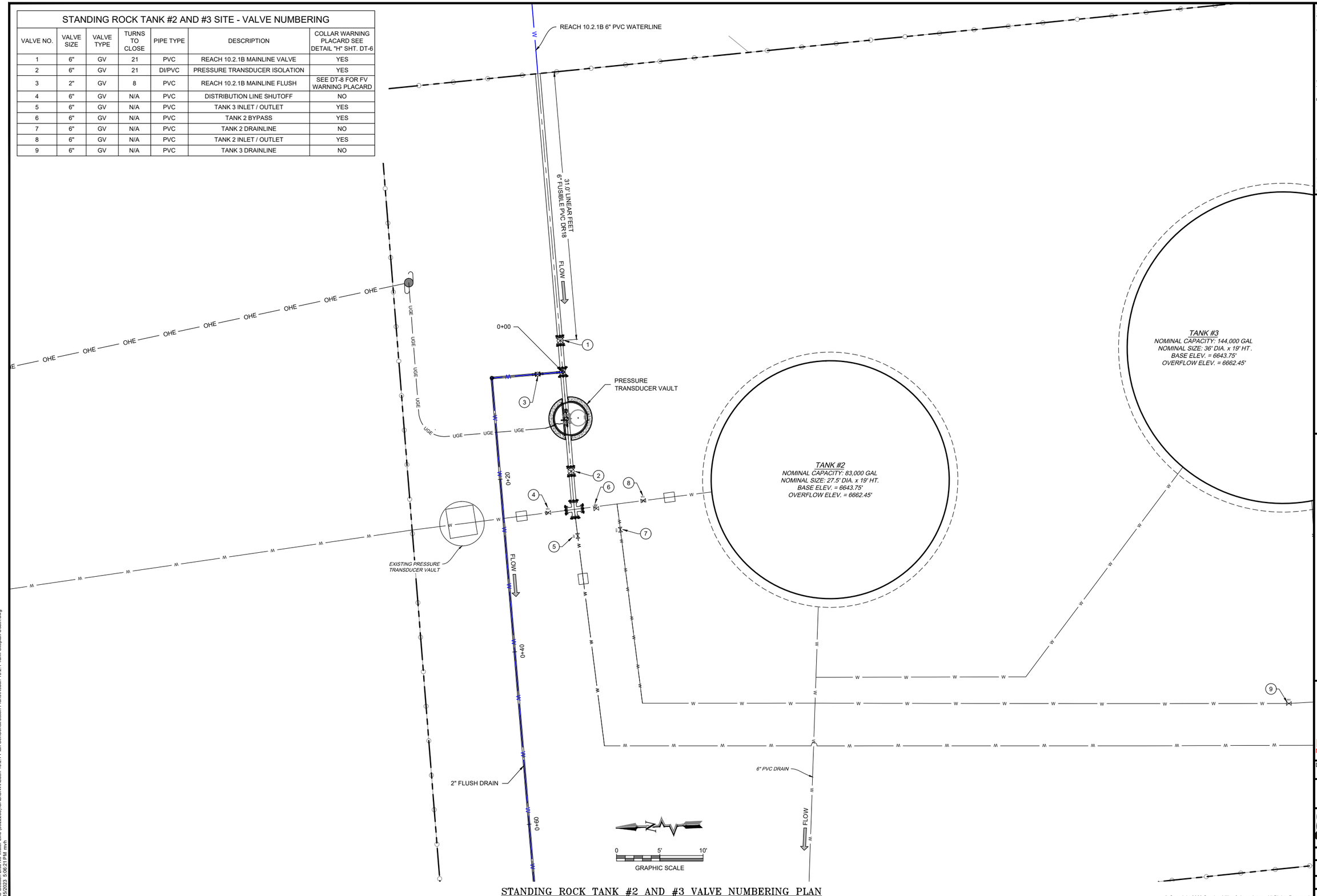
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STANDING ROCK TANK #2 AND #3 SITE - VALVE NUMBERING

VALVE NO.	VALVE SIZE	VALVE TYPE	TURNS TO CLOSE	PIPE TYPE	DESCRIPTION	COLLAR WARNING PLACARD SEE DETAIL "H" SHT. DT-6
1	6"	GV	21	PVC	REACH 10.2.1B MAINLINE VALVE	YES
2	6"	GV	21	DI/PVC	PRESSURE TRANSDUCER ISOLATION	YES
3	2"	GV	8	PVC	REACH 10.2.1B MAINLINE FLUSH	SEE DT-8 FOR FV WARNING PLACARD
4	6"	GV	N/A	PVC	DISTRIBUTION LINE SHUTOFF	NO
5	6"	GV	N/A	PVC	TANK 3 INLET / OUTLET	YES
6	6"	GV	N/A	PVC	TANK 2 BYPASS	YES
7	6"	GV	N/A	PVC	TANK 2 DRAINLINE	NO
8	6"	GV	N/A	PVC	TANK 2 INLET / OUTLET	YES
9	6"	GV	N/A	PVC	TANK 3 DRAINLINE	NO



STANDING ROCK TANK #2 AND #3 VALVE NUMBERING PLAN

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S. R. TANK #2 AND #3 VALVE NUMBERING PLAN
NAVAJO GALLUP WATER SUPPLY PROJECT
BEACON BISTI N9 - REACH 10.2.1
McKINLEY COUNTY, NEW MEXICO
SECTION 27, T. 18 N., R. 15 W.

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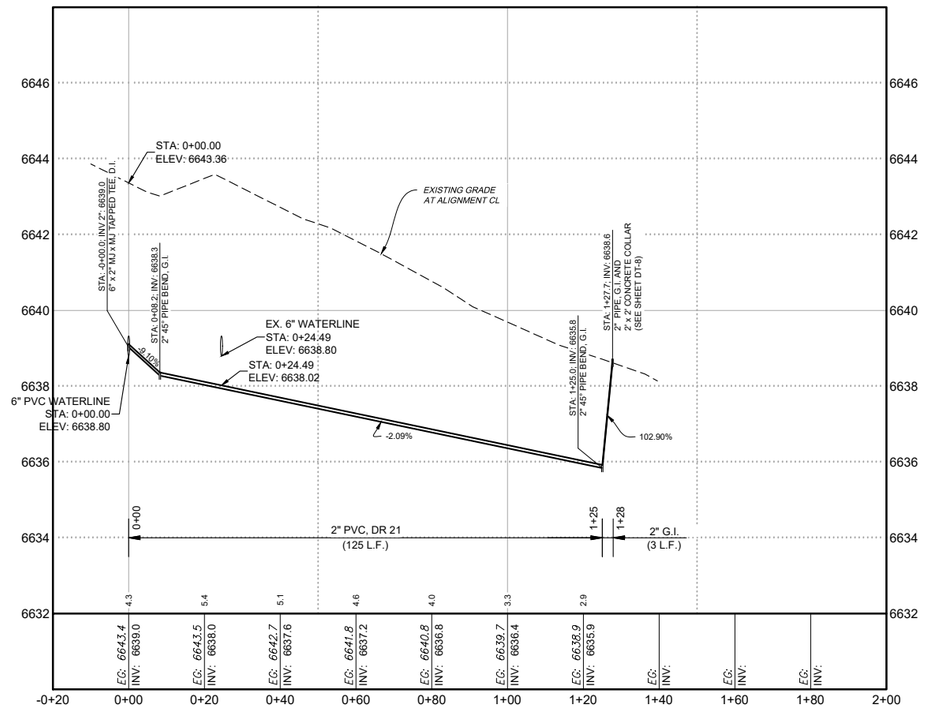
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NOTE:
SEE SHEET C-15 FOR PLAN VIEW



STANDING ROCK TANK #2 AND #3 SITE – 2" FLUSH LINE PROFILE

STANDING ROCK TANK #2 AND #3 SITE – 2" FLUSH LINE PROFILE

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S.R. TANK #2 AND #3 DRAIN LINE PROFILE
NAVAJO GALLUP WATER SUPPLY PROJECT
BEACON BISTI N9 - REACH 10.2.1

McKINLEY COUNTY, NEW MEXICO
SECTION 27, T. 18 N., R. 15 W.

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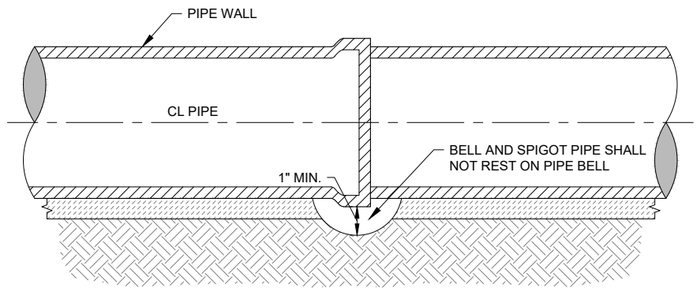
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NOTES:

1. SOIL CEMENT SLURRY MAY BE USED IN LIEU OF COMPACTED SELECT MATERIAL AT CONTRACTOR'S OPTION AND EXPENSE.
2. ANY SECTION OF PIPE EMBEDDED IN COMPACTED SELECT MATERIAL THAT FAILS TO MEET SOIL CLASSIFICATION AND/OR COMPACTION REQUIREMENTS SHALL BE DUG UP, RE-BURIED, RE-COMPACTED AND RE-TESTED AT CONTRACTOR'S SOLE EXPENSE.
3. MINIMUM CLEARANCES BETWEEN PIPE AND TRENCH WALL MUST BE MET PRIOR TO PLACING EMBEDMENT (WHETHER COMPACTED SELECT MATERIAL OR SOIL CEMENT SLURRY). INCREASE CLEARANCES AND/OR TRENCH WIDTH AS NEEDED TO ALLOW FOR COMPACTION AND/OR TO ENSURE ADEQUATE SOIL CEMENT SLURRY LAYER THICKNESS IN HAUNCH AREAS AND PIPE SPRING LINE. DO NOT ALLOW PIPE TO REST AGAINST TRENCH WALL.
4. ROUNDED TRENCH BOTTOMS MAY BE USED IN CONJUNCTION WITH SOIL CEMENT SLURRY, PROVIDED THE THICKNESS OF SOIL CEMENT AROUND THE PIPE IS AT NO POINT LESS THAN 3".

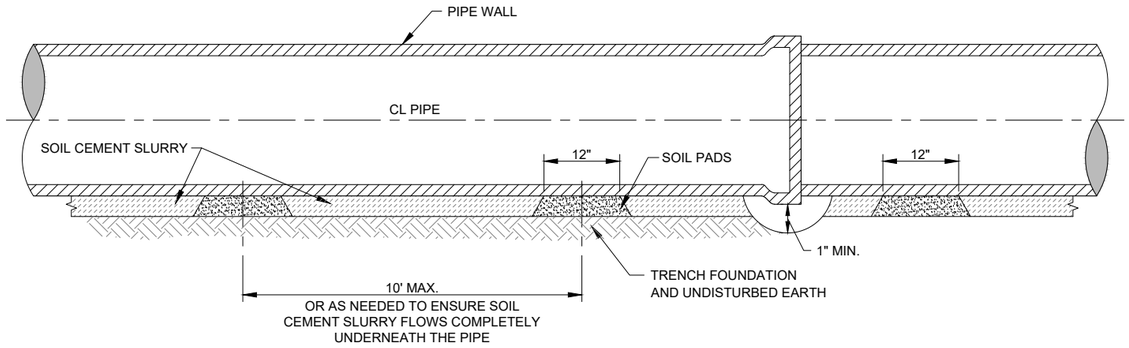


TYPICAL BELL HOLE DETAIL
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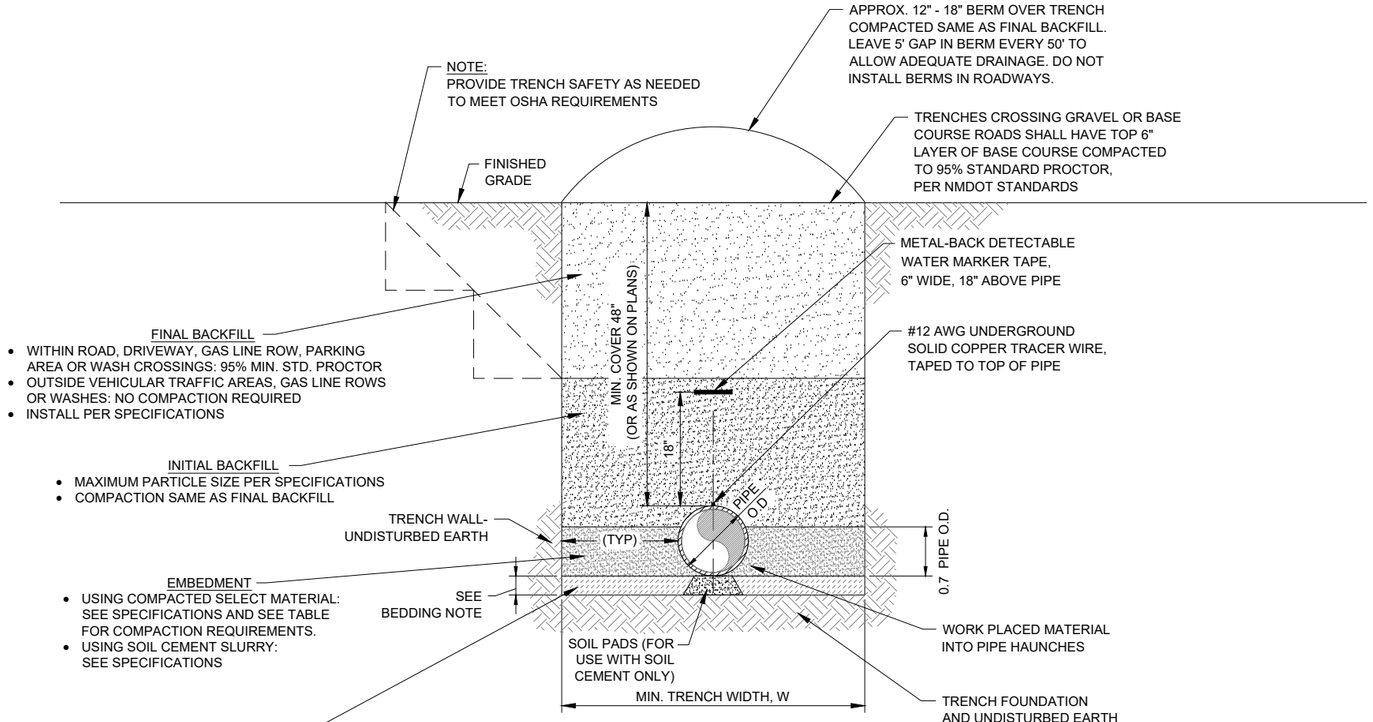
MINIMUM PERCENT COMPACTION FOR EMBEDMENT OUTSIDE TRAFFIC AREAS, GAS LINES ROW, WASH CROSSINGS	
CLEAN COARSE-GRAINED SOILS	
	6" Pipe
Cover Depth	Minimum Compaction
4' to 20'	85%
Coarse-grained soils (sand or gravel), GW, GP, SW, SP, with less than 12% fines	
SANDY OR GRAVELLY FINE-GRAINED SOILS & COARSE-GRAINED SOILS WITH FINES	
	6" Pipe
Cover Depth	Minimum Compaction
4' to 20'	85%
Fine-grained soils (LL<50) Soils with medium to no plasticity, CL, ML, ML-CL, with more than 30% coarse-grained particles, or Coarse-grained soils (sand or gravel), GM, GC, SM, SC, with more than 12% fines	

NOTES ON COMPACTION:

1. ALL COMPACTION VALUES BASED ON STD. PROCTOR, ASTM D698. SOIL CLASSIFICATIONS BASED ON ASTM D2487.
2. EMBEDMENT WITHIN DRIVING SURFACES OF ALL ROADS, AND DRIVEWAYS AS WELL AS WASH CROSSINGS, AROUND VAULTS AND METER CANS SHALL BE COMPACTED TO AT LEAST 95% STD. PROCTOR, REGARDLESS OF SOIL TYPE. SOIL CEMENT MAY BE USED IN LIEU OF COMPACTED SELECT MATERIAL.
3. COMPACTION REQUIRED WHERE SHOWN ON DRAWINGS.



SOIL CEMENT INSTALLATION WITH SOIL PADS
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TYPICAL TRENCH DETAIL
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TRENCH DETAILS
NAVAJO GALLUP WATER SUPPLY PROJECT
BEACON BISTI N9 - REACH 10.2.1
McKINLEY COUNTY, NEW MEXICO

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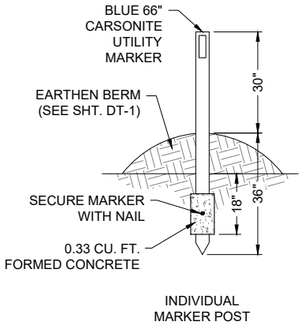
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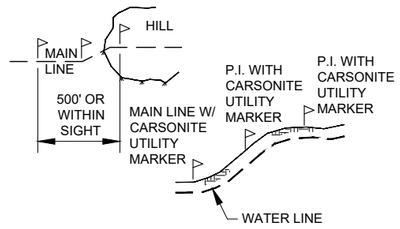
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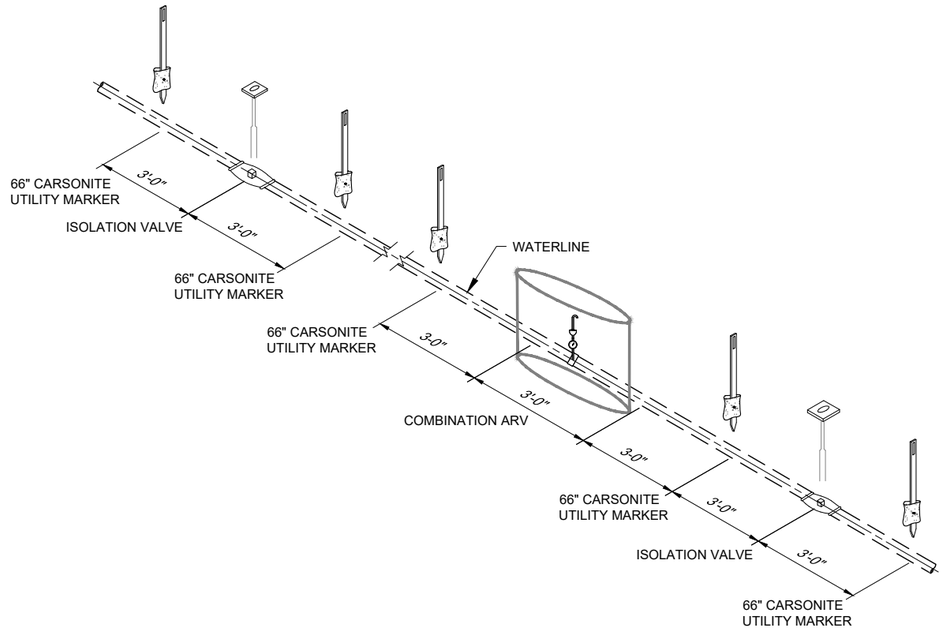
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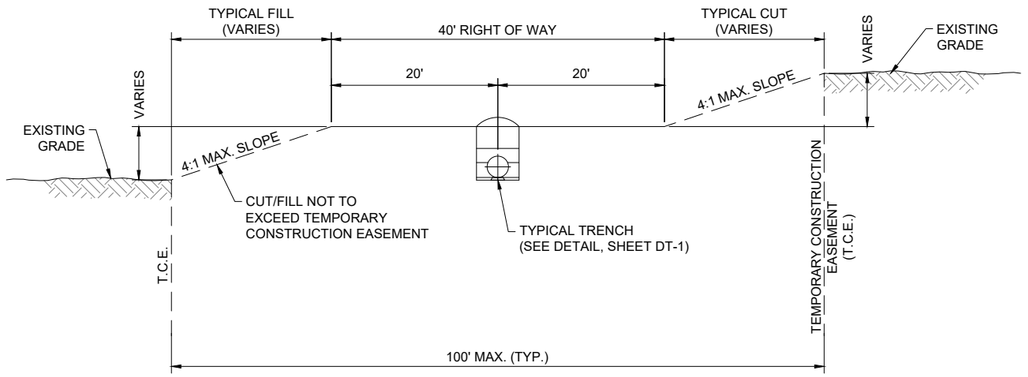
INDIVIDUAL MARKER POST

NOTES:
1. CARSONITE UTILITY MARKER ON ALL P.I.'S AND GRADE CHANGES.
2. MAXIMUM DISTANCE BETWEEN CARSONITE UTILITY MARKERS SHALL BE 1500 LF.

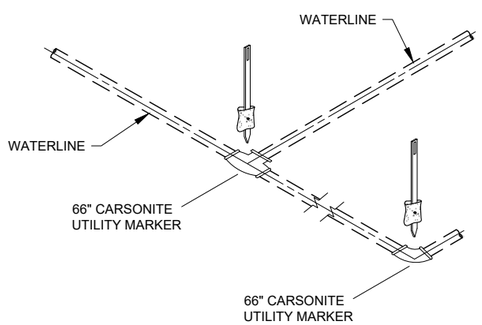




MARKER POSTS
GATE VALVE, ARV VAULT



TYPICAL PIPELINE ROW FINISHED GRADING DETAIL
NOT TO SCALE



TYPICAL MARKER POSTS
NOT TO SCALE

NOTES:
1. ALL DISTURBED EARTH SHALL BE COMPACTED AND RESEEDED AS REQUIRED PER DT-1 AND SPECIFICATIONS.
2. TOTAL WIDTH REDUCED IN AREAS WHERE TEMPORARY CONSTRUCTION EASEMENT IS TRUNCATED DUE TO ADJACENT CULTURALLY SENSITIVE AREAS.
3. FINAL GRADING AND SLOPE STABILIZATION MUST BE APPROVED BY ENGINEER.
4. IF MAINTENANCE ROAD CROSSES WATERLINE, 95% COMPACTION IS REQUIRED AT CROSSING.
5. MAINTENANCE ROAD IS INCIDENTAL TO PIPE CONSTRUCTION.

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MISCELLANEOUS CONSTRUCTION DETAILS
NAVAJO GALLUP WATER SUPPLY PROJECT
BEACON BISTI N9 - REACH 10.2.1
McKINLEY COUNTY, NEW MEXICO

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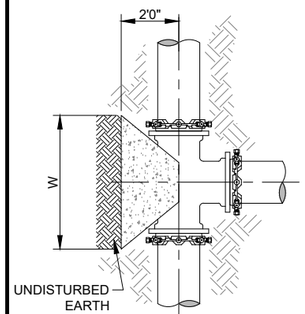
Thrust Block Dimension Schedule

Pipe	Fitting	Required Thrust Block Area (ft^2)	Design Thrust Block Size (H x W x T) [1] (ft)
6"	Reach 10.2.1 Tie-In	5.9	2.5' x 2.5' x 2'
6"	Chlorinator, Inlet & Outlet	8.3	3.0' x 3.0' x 2'
6"	Booster Station, Inlet & Outlet	8.3	3.0' x 3.0' x 2'
6"	Flush Valve (2" Tee) Upstream of Standing Rock Tank 1	0.7	2' x 2' x 2'
6"	Flush Valve (2" Tee) Downstream of Standing Rock Tank 1	0.5	2' x 2' x 2'

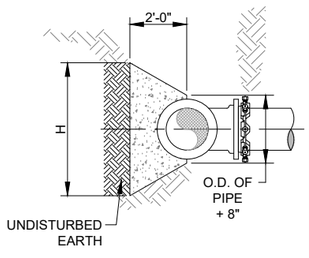
[1] Minimum Thrust Block H x W size 2' x 2' x 2'

GENERAL NOTES

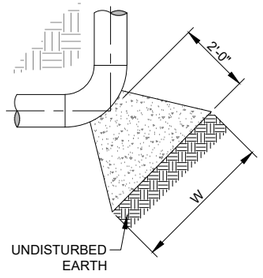
1. ASSUMED SOIL BEARING OF 1,500 PSF
2. ALL CONCRETE SHALL BE 3000 psi, MINIMUM COMPRESSIVE STRENGTH IN 28 DAYS



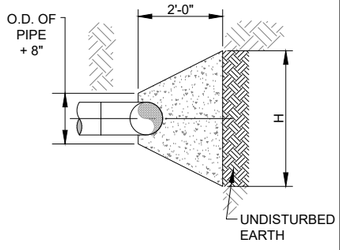
PLAN VIEW
CONCRETE BLOCKING
FOR TEE



ELEVATION VIEW
CONCRETE BLOCKING
FOR TEE



PLAN VIEW
CONCRETE BLOCKING
FOR ELBOW



ELEVATION VIEW
CONCRETE BLOCKING
FOR ELBOW

THRUST BLOCK DETAIL
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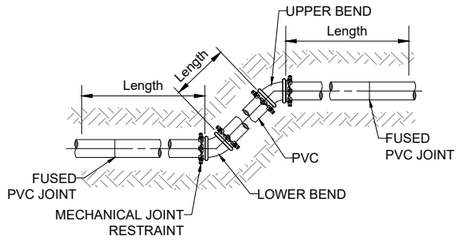
Minimum Required Restraint Lengths for Individual Fittings

Reach 10.2.1 - 6" DR 18 PVC				
Fitting	Pipe Size in	Pipe DR -	Test Pressure (psi)	Design Restraint Length (ft)
Tee	16x6	18	235	20
Isolation Valve/ Dead End	6	18	235	70
From End of Casing	6	18	235	40
Horizontal Bend or Sweep				
90°	6	18	235	25
45°	6	18	235	20
22.5°	6	18	235	20
11.25°	6	18	235	20
Vertical Bend or Sweep[1]				
45°, upper bend	6	18	235	30
45°, lower bend	6	18	235	20
22.5°, upper bend	6	18	235	20
22.5°, lower bend	6	18	235	20
11.25°, upper bend	6	18	235	20
11.25°, lower bend	6	18	235	20
Transition				
Reducer	6 x 4	18	235	35

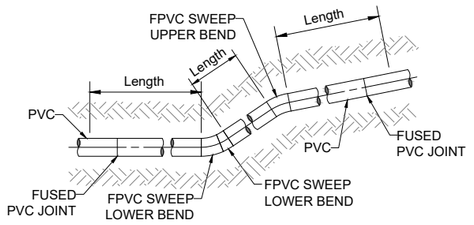
[1] Gives the required restraint length on each side of the specified bend, using a low side depth (from ground surface to top of the lower pipe) of 6-ft.

NOTES:

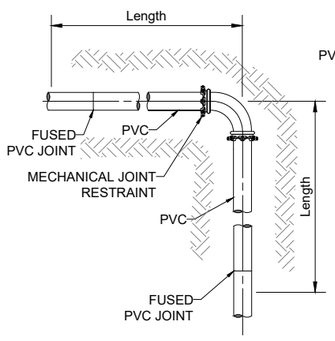
1. MECHANICAL JOINT RESTRAINTS SHALL BE RATED TO PIPE PRESSURE RATINGS.
2. MECHANICAL JOINT RESTRAINTS INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.
3. ALL BURIED METALLIC WATER BEARING COMPONENTS SHALL BE COATED WITH FUSION BONDED EPOXY, INTERIOR AND EXTERIOR.
4. APPLY CATHODIC PROTECTION TO ALL BURIED METALLIC COMPONENTS LOCATED WITHIN CORROSIVE SOILS ZONES, AS DESIGNATED IN PLANS AND/OR SPECIFICATIONS.
5. ALL RESTRAINED PIPE JOINTS SHALL BE FUSIBLE PVC. NO BELL HARNESS RESTRAINTS SHALL BE ALLOWED.
6. ALL SITE PIPING SHALL BE FULLY RESTRAINED WITH FUSIBLE PVC EXCLUDING DRAIN LINES.
7. WHERE MULTIPLE FITTING / VALVE RESTRAINT LENGTHS OVERLAP, THE RESTRAINT LENGTHS FOR EACH APPURTENANCE SHALL BE SHOWN ON PLANS. CONTRACTOR TO NOTIFY ENGINEER IF NOT SHOWN.
8. FOR ANY FITTING OR APPURTENANCE NOT EXPRESSLY CALLED OUT IN PLANS, REFER TO THIS SHEET FOR RESTRAINT LENGTH REQUIREMENTS.
9. NO VERTICAL BENDS SHALL BE ALLOWED THAT ARE NOT SHOWN ON DRAWINGS WITHOUT ENGINEER'S PRIOR APPROVAL. IN THE EVENT VERTICAL BENDS ARE ADDED, ADDITIONAL JOINT RESTRAINT SHALL BE REQUIRED AT CONTRACTOR'S EXPENSE.
10. FOR RESTRAINED LENGTHS 20 LF OR LESS, JOINTED PVC PIPE MAY BE USED IN LIEU OF FUSIBLE PVC, PROVIDED THAT THERE ARE NO BELL AND SPIGOT JOINTS WITHIN REQUIRED RESTRAINT LENGTH.



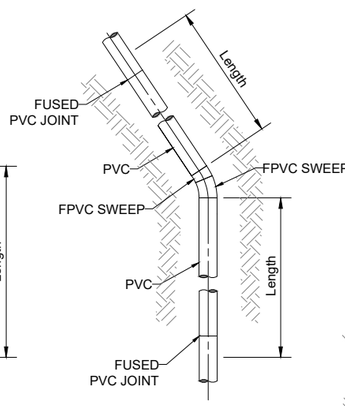
ELEVATION VIEW
MECHANICAL JOINT RESTRAINT FOR VERTICAL OFFSET



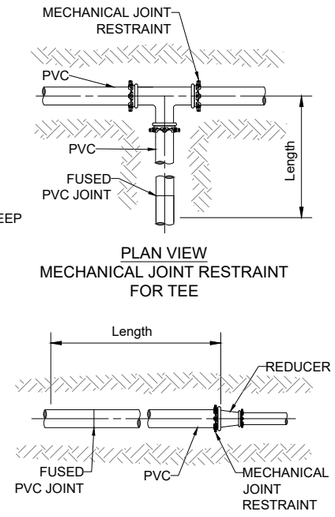
ELEVATION VIEW
FUSED JOINT RESTRAINT FOR VERTICAL SWEEP



PLAN VIEW
MECHANICAL JOINT RESTRAINT
FOR HORIZONTAL BEND

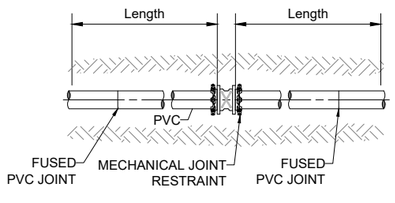


PLAN VIEW
FUSED JOINT RESTRAINT
FOR HORIZONTAL SWEEP

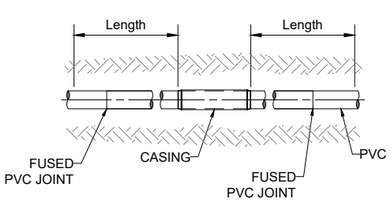


PLAN VIEW
MECHANICAL JOINT RESTRAINT
FOR TEE

PLAN VIEW
MECHANICAL JOINT RESTRAINT
FOR REDUCERS



PLAN VIEW
MECHANICAL JOINT RESTRAINT
FOR ISOLATION VALVE



PLAN VIEW
FUSED JOINT RESTRAINT
FOR CASING

MECHANICAL / FUSED JOINT RESTRAINTS
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www.soudermiller.com

Client: The Navajo Nation
Location: Standing Rock, NM

THRUST BLOCK & JOINT RESTRAINT DETAILS
NAVAJO GALLUP WATER SUPPLY PROJECT
BEACON BISTI N9 - REACH 10.2.1
McKINLEY COUNTY, NEW MEXICO

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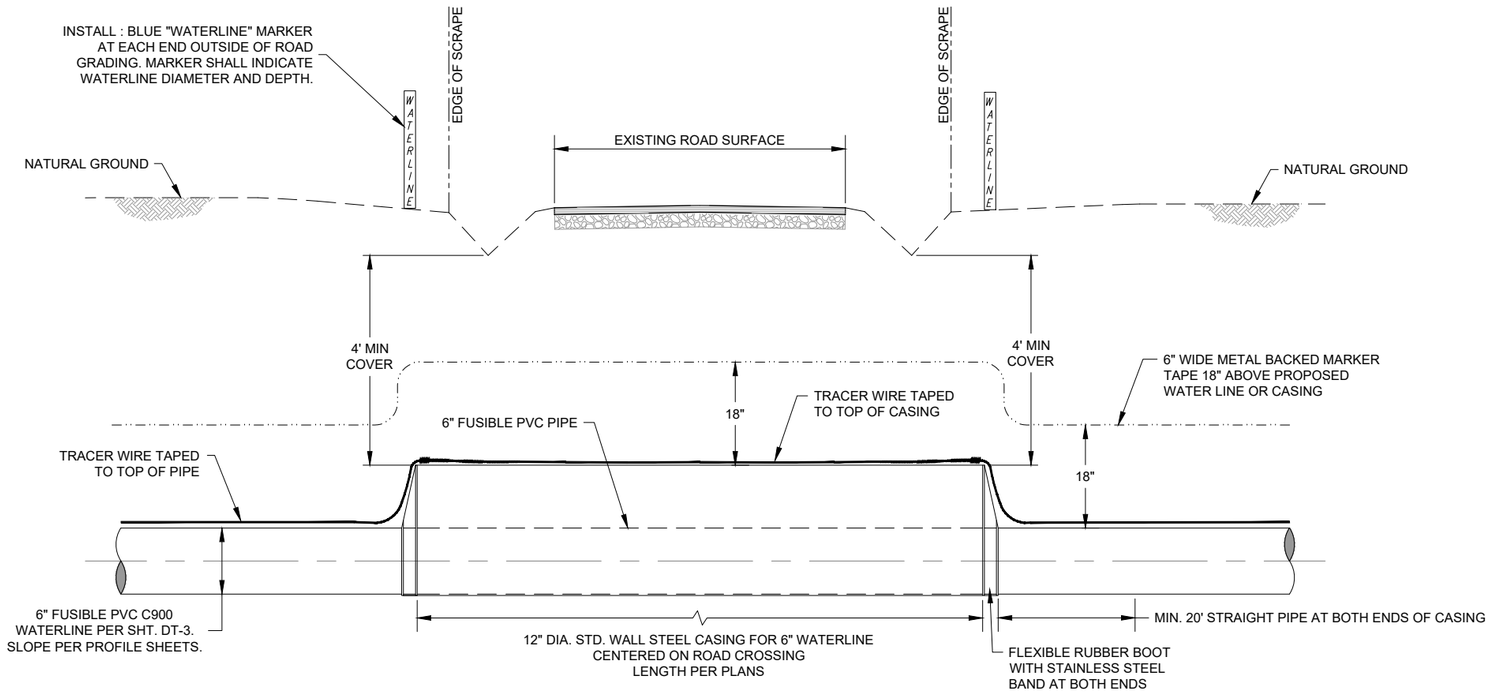
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Project No: 6922268
Sheet: DT-3

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TYPICAL OPEN CUT ROAD CROSSING

NOT TO SCALE

CONSTRUCTION NOTES:

1. EXCAVATIONS OUTSIDE THE ROADWAY BAR DITCH SHALL BE COMPACTED AS SPECIFIED IN THE CONSTRUCTION DOCUMENTS. EXCAVATION WITHIN THE TOE OF THE BAR DITCH SHALL BE COMPACTED TO 95% MAXIMUM DRY DENSITY (STANDARD PROCTOR).
2. APPLY CATHODIC PROTECTION TO ALL BURIED METALLIC CASINGS LOCATED WITHIN CORROSIVE SOIL ZONES, AS DESIGNATED IN THE PLANS AND/OR SPECIFICATIONS.
3. ALL METALLIC PIPE, WHETHER CATHODICALLY PROTECTED OR NOT, SHALL BE PROVIDED WITH CORROSION MONITORING SYSTEMS.
4. TRACER WIRE CONTINUITY SHALL BE MAINTAINED ACROSS THE ROAD CROSSING.
5. FOR MINIMUM FUSIBLE PVC PIPE RESTRAINTS REQUIREMENTS ON EACH SIDE OF CASING, SEE TABLE SHEET DT-3.
6. THE INSIDE OF THE CASING AND THE OUTSIDE OF THE CARRIER PIPE MUST BE FREE OF ANY IRREGULARITIES THAT WOULD CAUSE A POINT LOAD ON CARRIER PIPE. ENGINEER RESERVES THE RIGHT TO REQUIRE SPACERS (MAX. 10' APART) IF CASING OR CARRIER PIPE ARE NOT SUFFICIENTLY SMOOTH AND REGULAR. EXTERIOR WELD BEADS SHALL BE REMOVED FROM FUSIBLE PVC CARRIER PIPE.
7. FOR MCKINLEY COUNTY AND BIA ROADS, ADHERE TO ANY ADDITIONAL CROSSING PERMIT REQUIREMENTS.
8. OPEN CUT CASINGS SHALL BE ASPHALTIC COATED PER AWW C104.
9. ROAD SURFACE TO BE RESTORED TO ORIGINAL CONDITION OR BETTER. THIS INCLUDES INSTALLATION OF GRAVEL, ASPHALT, OR BASE COURSE SURFACING MATERIAL.

Revision	Date	Description	By	Chkd

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www.soudermiller.com

Client: The Navajo Nation
Location: Standing Rock, NM

CASED ROAD CROSSING DETAILS
NAVAJO GALLUP WATER SUPPLY PROJECT
BEACON BISTI N9 - REACH 10.2.1
McKINLEY COUNTY, NEW MEXICO

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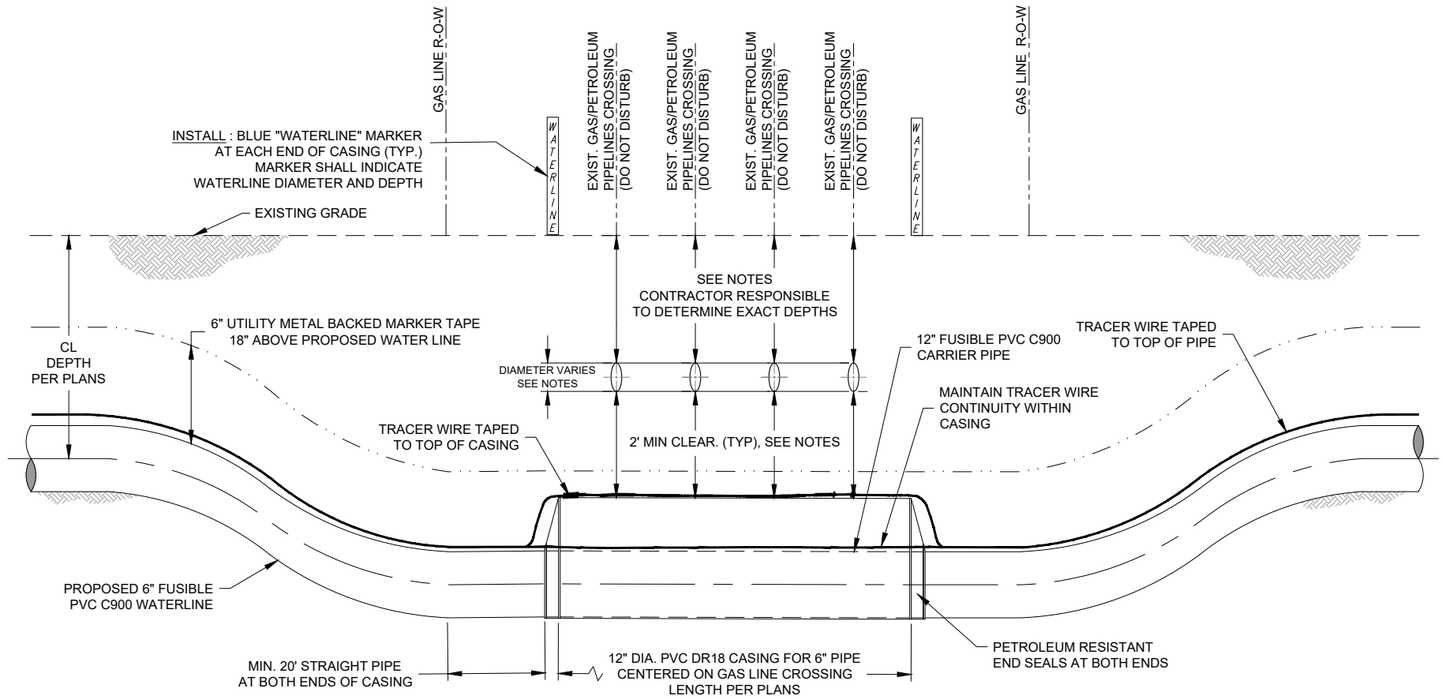
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TYPICAL GAS PIPELINE CROSSING DETAIL

NOT TO SCALE

SPECIAL NOTES AND CONTACTS-UTILITY PIPELINE CROSSINGS

NOTES:

1. NOTIFY GAS LINE COMPANIES (LISTED BELOW) 30 WORKING DAYS AND CALL NM ONE-CALL AT LEAST 3 WORKING DAYS PRIOR TO GRADING, CROSSING, MATERIAL STORAGE OR EQUIPMENT MOVING ACROSS GAS LINE RIGHT-OF-WAY OR ADJACENT ACCESS ROADS.
2. GAS LINE COMPANY REPRESENTATIVE MUST BE PRESENT DURING ALL CONSTRUCTION ACTIVITIES WITHIN GAS LINE RIGHT-OF-WAY, INCLUDING GRADING, EXCAVATION AND CLEANUP.
3. CONTRACTOR RESPONSIBLE TO LOCATE AND EXPOSE ALL EXISTING GAS / PETROLEUM LINES, IN ACCORDANCE WITH GAS COMPANY REQUIREMENTS.
4. EXCAVATE BY HAND OR VACUUM DRILL WITHIN 2 FEET OF GAS LINE. IF GAS LINE COMPANY APPROVES, CONTRACTOR MAY INSTALL CASING BY BORING, USING FUSIBLE PVC CASING WITH INTERIOR WELD BEAD REMOVED.
5. CROSS UNDER ALL GAS LINES. CROSSINGS REQUIRE 2' MIN. CLEARANCE FROM TOP OF CASING TO BOTTOM OF GAS LINE. WHERE MULTIPLE GAS LINES ARE CROSSED IN THE SAME ROW, MAINTAIN MIN. CLEARANCE UNDER THE LOWEST GAS LINE.
6. CONTRACTOR SHALL NOT SUSPEND EXISTING GAS LINE PIPE MORE THAN 12 FEET WITHOUT SOIL BEDDING OR OTHER SUPPORT APPROVED BY GAS LINE COMPANY.
7. COMPLETE ANY AND ALL ENCROACHMENT AGREEMENTS REQUIRED BY GAS LINE COMPANIES. ABIDE BY ALL CONDITIONS STIPULATED BY GAS LINE COMPANIES AND PROVIDE COPIES TO ENGINEER.
8. HEAVY EQUIPMENT MUST CROSS PIPELINE ONLY AT CROSSING LOCATIONS APPROVED BY GAS LINE COMPANIES.
9. FOR MINIMUM FUSIBLE PVC PIPE RESTRAINT REQUIREMENTS ON EACH SIDE OF CASING, SEE TABLE SHEET DT-3. ALL REMAINING CARRIER PIPE WITHIN A 200 FT. RADIUS OF LIQUID PETROLEUM LINE SHALL EITHER BE FUSIBLE PVC OR BELL-AND-SPIGOT PVC WITH PETROLEUM RESISTANT GASKETS. CASING SHALL EITHER BE FUSIBLE PVC WITH INTERIOR WELD BEAD REMOVED OR BELL AND SPIGOT PVC.
10. TRACER WIRE CONTINUITY SHALL BE MAINTAINED ACROSS THE GAS LINE XING.
11. THE INSIDE OF THE CASING AND THE OUTSIDE OF THE CARRIER PIPE MUST BE FREE OF ANY IRREGULARITIES THAT WOULD CAUSE A POINT LOAD ON CARRIER PIPE. ENGINEER RESERVES THE RIGHT TO REQUIRE SPACERS (MAX. 10' APART) IF CASING OR CARRIER PIPE ARE NOT SUFFICIENTLY SMOOTH AND REGULAR. EXTERIOR WELD BEADS SHALL BE REMOVED FROM FUSIBLE PVC CARRIER PIPE.
12. APPROXIMATE DEPTH CALL OUTS OF GAS LINES ARE MEASURED FROM THE EXISTING GROUND TO THE TOP OF PIPE. APPROXIMATE DEPTH CALL OUTS OF CASING MEASURED FROM BOTTOM OF EXISTING GAS LINES TO TOP OF CASING.

(1) = STA: 41+51.8 (APPROX.)
ENERGY TRANSFER PARTNERS 575-347-6968
PATRICK R. TRONCOSO - FIELD CONTACT 505-870-9419
2 GAS PIPELINES
(30" Ø GASLINE CROSSING (DEPTH 52")
(36" Ø GASLINE CROSSING (DEPTH 46")
MARATHON PETROLEUM CORPORATION
DUANE HOWE - FIELD CONTACT 505-444-0084
2 GAS PIPELINES
(6" Ø GASLINE CROSSING (DEPTH 30")
(8" Ø GASLINE CROSSING (DEPTH 30")
SEC-15, T-18-N, R-15-W

(2) = STA: 75+22.0 (APPROX.)
MARATHON PETROLEUM CORPORATION
DUANE HOWE - FIELD CONTACT 505-444-0084
2 GAS PIPELINES
(8" Ø GASLINE CROSSING (DEPTH 30")
(6" Ø GASLINE CROSSING (DEPTH 30")
ENERGY TRANSFER PARTNERS 575-347-6968
PATRICK R. TRONCOSO - FIELD CONTACT 505-870-9419
2 GAS PIPELINES
(36" Ø GASLINE CROSSING (DEPTH 46")
(30" Ø GASLINE CROSSING (DEPTH 52")
SEC-15, T-18-N, R-15-W

(3) = STA: 103+52.1 (APPROX.)
ENERGY TRANSFER PARTNERS 575-347-6968
PATRICK R. TRONCOSO - FIELD CONTACT 505-870-9419
2 GAS PIPELINES
(30" Ø GASLINE CROSSING (DEPTH 78")
(36" Ø GASLINE CROSSING (DEPTH 67")
MARATHON PETROLEUM CORPORATION
DUANE HOWE - FIELD CONTACT 505-444-0084
2 GAS PIPELINES
(6" Ø GASLINE CROSSING (DEPTH 38")
(8" Ø GASLINE CROSSING (DEPTH 34")
SEC-15, T-18-N, R-15-W

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Client: The Navajo Nation
Location: Standing Rock, NM

GAS LINE CROSSING DETAILS
NAVAJO GALLUP WATER SUPPLY PROJECT
BEACON BISTI N9 - REACH 10.2.1
McKINLEY COUNTY, NEW MEXICO

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Designed	Drawn	Checked
TTT	AAV	JMG

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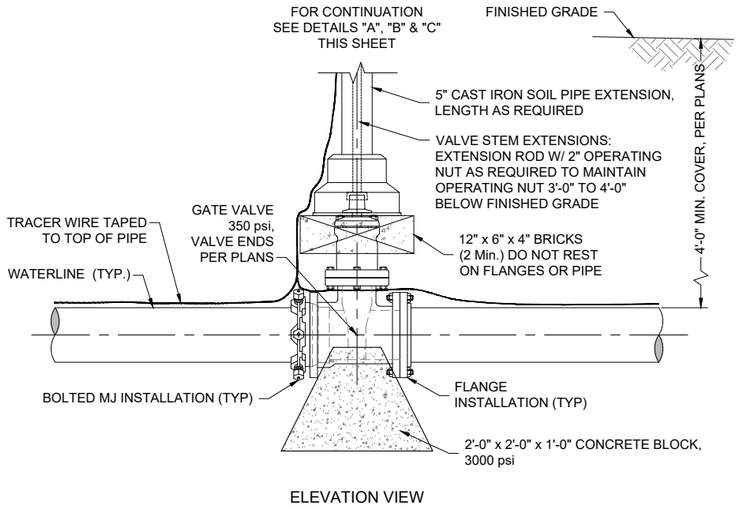
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Project No: 6922268
Sheet: DT-5

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NOTES:

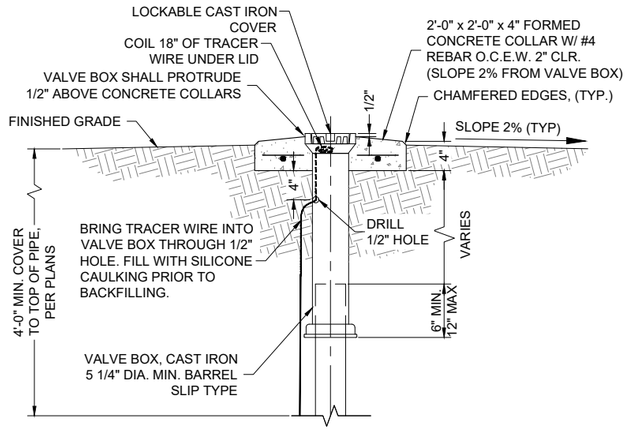
1. CONTRACTOR SHALL SCRIBE ALL CONCRETE VALVE COLLARS, PER DETAILS "A" & "B" THIS SHEET. CONCRETE SHALL BE SCRIBED PRIOR TO CURING OR ETCHED AFTER CURING WITH 4" GRINDER.
2. AFFIX WARNING PLACARD TO VALVE BOX COVER INSIDE METER CAN FOR ALL MAINLINE VALVES.
3. AFFIX ALUMINUM VALVE IDENTIFICATION PLATES TO ALL SITE VALVE COLLARS, PER DETAILS "A", "B", "E", "G", & "H" THIS SHEET. REFER TO SHEET C-14 & C-17 FOR VALVE-SPECIFIC LABELING.
4. AFFIX ALUMINUM VALVE IDENTIFICATION PLATES TO ALL MAINLINE VALVE COLLARS, PER DETAILS "B", "G" & "H" THIS SHEET. REFER TO SHEET C-14 & C-17 FOR VALVE-SPECIFIC LABELING.
5. ALL MATERIALS SHALL BE WORKING PRESSURE RATED TO AT LEAST THE PRESSURE RATING OF THE PIPE, UNLESS OTHERWISE NOTED.
6. ALL BURIED VALVES SHALL BE COATED WITH FUSION BONDED EPOXY, INTERIOR AND EXTERIOR.
7. NOTE VALVE ENDS SHALL BE MJ x MJ AS UNLESS OTHERWISE NOTED.
8. APPLY CATHODIC PROTECTION TO ALL BURIED METALLIC PRESSURE-BEARING COMPONENTS LOCATED WITHIN CORROSIVE SOIL ZONES, AS DESIGNATED IN THE PLANS AND/OR SPECIFICATIONS.
9. FLANGES SHALL BE ANSI CLASS 125 (IRON).



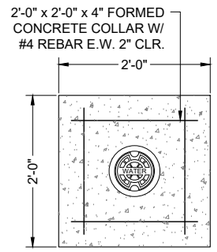
ELEVATION VIEW

TYPICAL GATE VALVE DETAIL

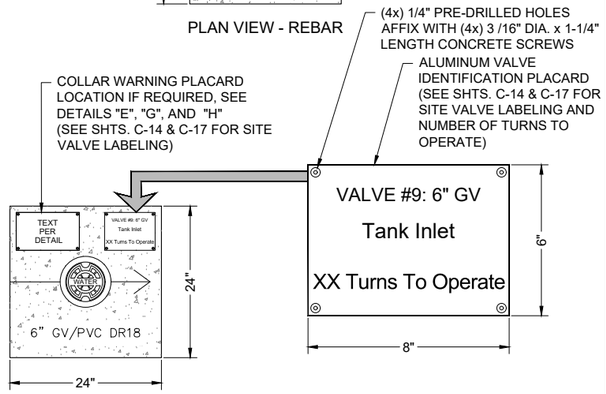
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ELEVATION VIEW



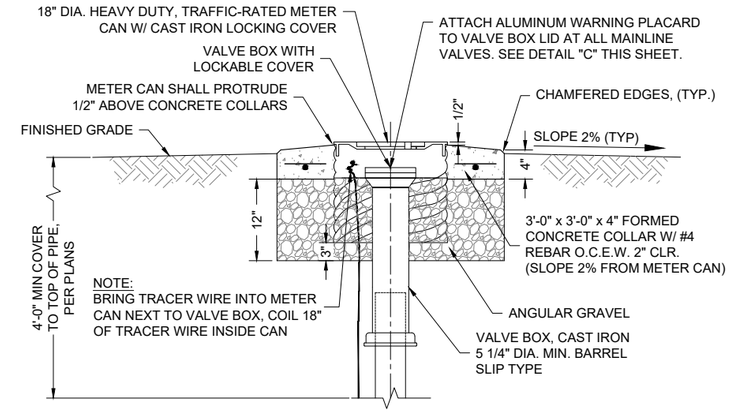
PLAN VIEW - REBAR



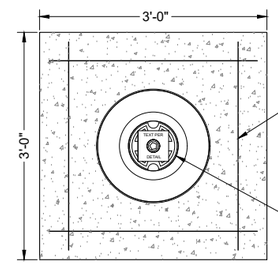
PLAN VIEW - SURFACE

DETAIL "A" TYPICAL SITE LOCKING VALVE BOX, COLLAR AND VALVE ID PLACARD DETAIL

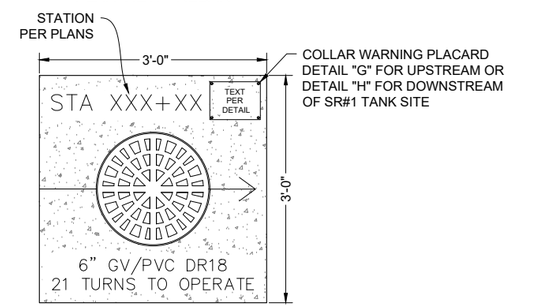
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ELEVATION VIEW



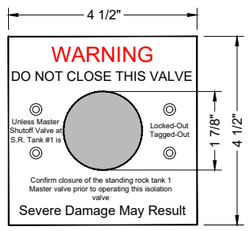
PLAN VIEW - REBAR



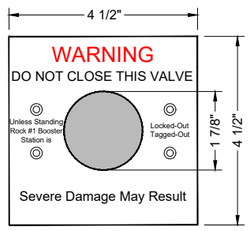
PLAN VIEW - SURFACE

DETAIL "B" TYPICAL MAINLINE METER CAN AND VALVE BOX, COLLAR AND COLLAR WARNING PLACARD DETAIL - USE WITH WARNING PLACARD

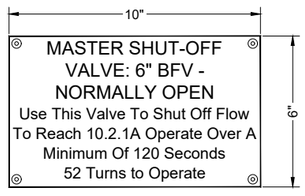
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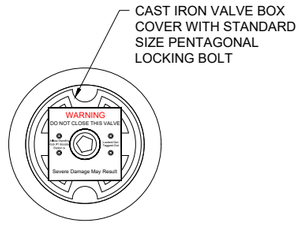
DETAIL "C" WARNING PLACARD FOR MAINLINE ISOLATION VALVES UPSTREAM OF SR#1 TANK



DETAIL "D" WARNING PLACARD FOR MAINLINE ISOLATION VALVES DOWNSTREAM OF SR#1 TANK



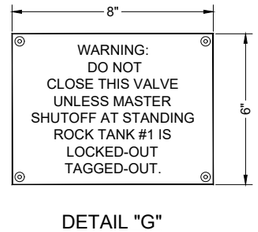
DETAIL "E" IDENTIFICATION PLACARD FOR MASTER SHUTOFF VALVE AT STANDING ROCK TANK SITE #1



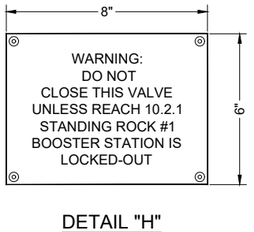
PLAN VIEW

DETAIL "F" TYPICAL WARNING PLACARD DETAIL

NOT TO SCALE



DETAIL "G" ALUMNIUM VALVE COLLAR WARNING PLACARD FOR ISOLATION VALVES UPSTREAM OF SR#1 TANK SITE



DETAIL "H" ALUMNIUM VALVE COLLAR WARNING PLACARD FOR ISOLATION VALVES DOWNSTREAM OF SR#1 TANK SITE

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VALVE DETAILS
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BEACON BISTI N9 - REACH 10.2.1
McKINLEY COUNTY, NEW MEXICO

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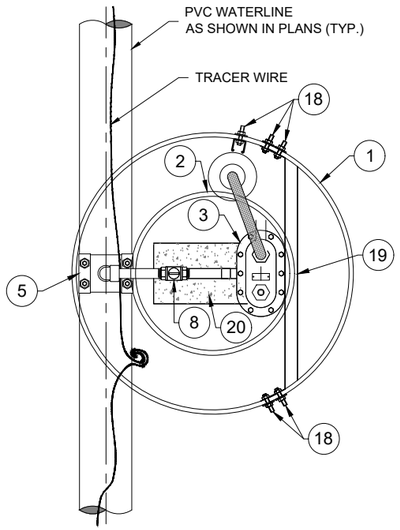
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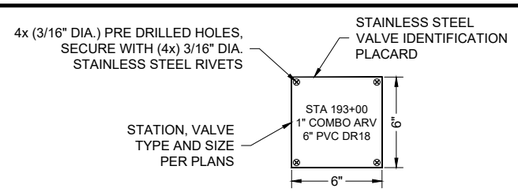
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Project No: 6922268
Sheet: DT-6

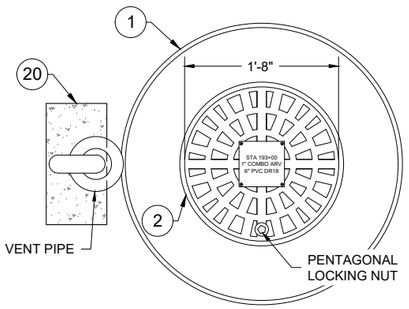
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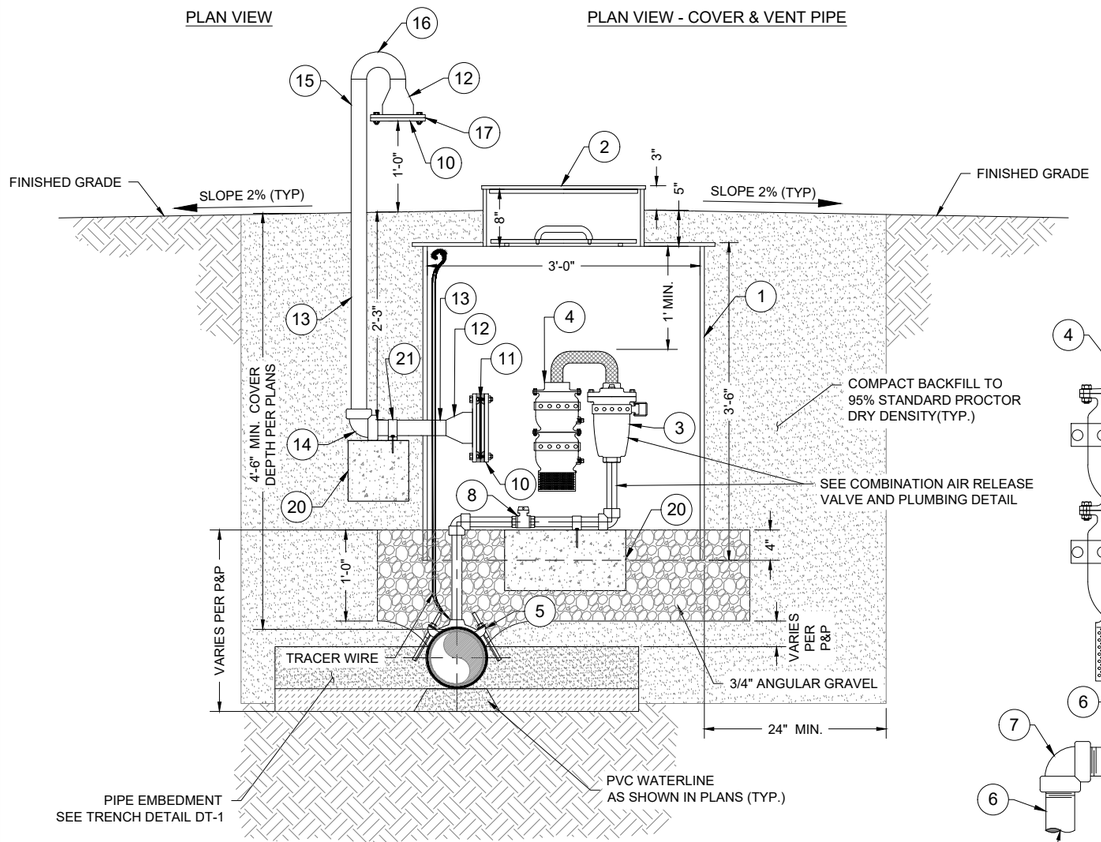
PLAN VIEW



VALVE IDENTIFICATION PLACARD



PLAN VIEW - COVER & VENT PIPE



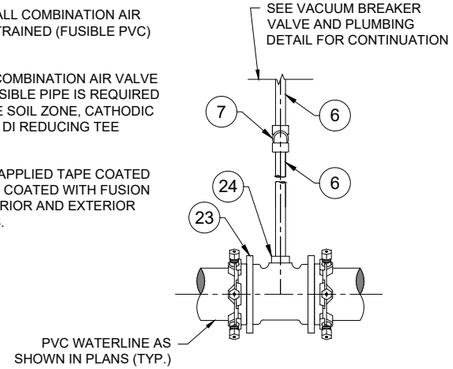
ELEVATION VIEW

COMBINATION AIR VALVE DETAIL

0' 10" 20"

ALTERNATIVE CONFIGURATION "A" NOTES:

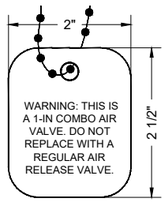
1. TO BE USED ONLY IN NON-CORROSIVE SOILS, AS INDICATED ON PLAN SHEETS, UNLESS OTHERWISE APPROVED BY ENGINEER.
2. MUST BE USED FOR ALL COMBINATION AIR VALVES WITHIN RESTRAINED (FUSIBLE PVC) PIPE SECTIONS.
3. IN THE EVENT THAT COMBINATION AIR VALVE INSTALLATION ON FUSIBLE PIPE IS REQUIRED WITHIN A CORROSIVE SOIL ZONE, CATHODIC PROTECTION OF THE DI REDUCING TEE SHALL BE PROVIDED.
4. TEE SHALL BE COLD APPLIED TAPE COATED PER AWWA C209 AND COATED WITH FUSION BONDED EPOXY INTERIOR AND EXTERIOR PER SPECIFICATIONS.



ELEVATION VIEW

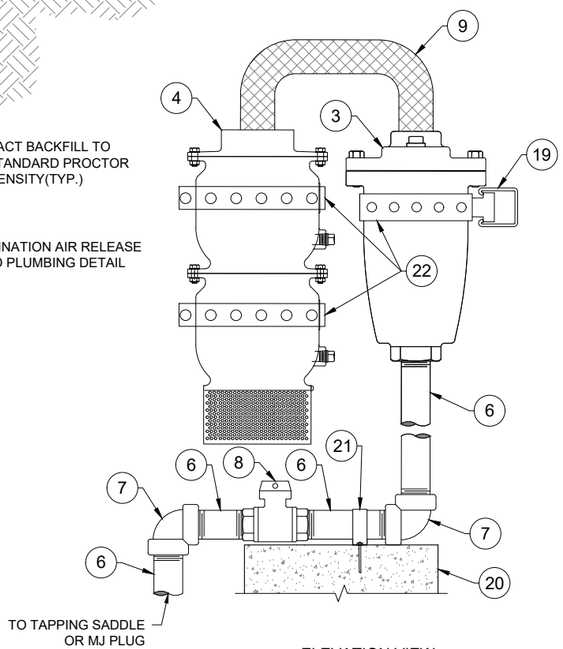
ALTERNATIVE CONFIGURATION "A"

N.T.S



VALVE WARNING TAG DETAIL

(HANG FROM 1" COMBINATION AIR VALVE)



ELEVATION VIEW

COMBINATION AIR VALVE AND PLUMBING DETAIL

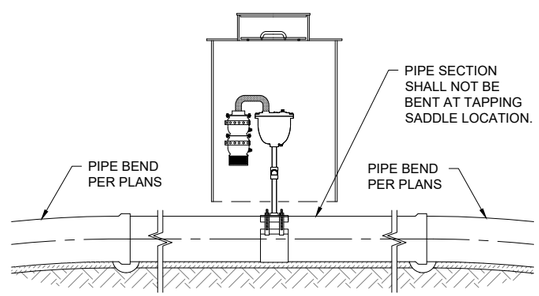
N.T.S.

KEYED NOTES - 1" COMBINATION AIR VALVE ASSEMBLY

Item No.	Description
1	36" DIA. PLASTIC (METER) PIT WITH REMOVABLE FROST LID
2	20" METER PIT LOCKING COVER(CAST IRON)WITH FROST PROOF INNER LID
3	1" VALMATIC MODEL NO, 201C SV COMBINATION AIR VALVE (SINGLE BODY TYPE), 300 psi
4	1" VALMATIC FLOODSAFE INFLOW PREVENTER
5	6" x 1" TAPPING SADDLE, D.I. W/ FUSION BONDED NYLON COATING, SS 304 DUAL STRAPS AND SS 304 BOLT KIT, FNPT, ROMAC 202 NS, OAE, 350 psi WP
6	1" NIPPLE, SS 304, NPT
7	1" 90° ELBOW, SS 304, NPT, SCHEDULE 40
8	1" CURB STOP, SS 304, NPT
9	1" STAINLESS STEEL BRAIDED HOSE, NPT
10	4" GALVANIZED IRON COMPANION FLANGE, DRILLED TO FIT
11	4" FREEZE PREVENTION DRAFT DAMPENER. VALMATIC FROSTSAFE MODEL #1504, OAE
12	4" FLANGED x 2" WELDED GALVANIZED IRON REDUCER (PIPE EXTERIOR PAINTED BLUE)
13	2" STD. GALVANIZED IRON PIPE, THREADED END (PIPE EXTERIOR COLD-APPLIED TAPE COATED)
14	2" GALVANIZED IRON 90° ELBOW, THREADED (PIPE EXTERIOR COLD-APPLIED TAPE COATED)
15	2" STD. GALVANIZED IRON PIPE (PIPE EXTERIOR PAINTED BLUE)
16	2" GALVANIZED IRON LONG RADIUS WELDED RETURN (PIPE EXTERIOR PAINTED BLUE)
17	VARMINT SCREEN
18	2" SS 304 ANCHOR BOLTS, NUTS AND FENDER WASHERS (2x EACH SIDE)
19	1 5/8" GALVANIZED UNI-STRUT (ADJUST AS NEEDED TO FIT BOTH VALVES AND PIPING)
20	CONCRETE SUPPORT BLOCK, SOLID 8" x 8" x 16" (MIN. 3" FROM EDGE OF PIPE)
21	1" WIDE PIPE STRAP, BOLT TO SUPPORT BLOCK (3" BOLTS)
22	STAINLESS STEEL PERFORATED METAL HANGER STRAP
23	6" x 6" x 2" MJ x MJ TAPPED TEE, D.I., 350 psi WP
24	2" MALE x 1" FEMALE REDUCING BUSHING, NPT, SS 304

NOTES:

1. ALL FLANGES SHALL BE FLAT FACED, UNLESS OTHERWISE NOTED.
2. ALL NON-STAINLESS METALLIC PIPE IN CONTACT WITH SOIL SHALL BE COLD APPLIED TAPE-COATED PER AWWA C209.
3. COMBINATION AIR VALVE TO BE LOCATED IN FIELD BY ENGINEER.
4. COIL TRACER WIRE ON INSIDE WALLS AT TOP OF METER PIT.
5. ALL STAINLESS STEEL PIPE AND FITTINGS SHALL HAVE A WORKING PRESSURE OF AT LEAST 350 psi, UNLESS OTHERWISE NOTED.
6. REMOVE ALL PVC CUTTINGS FROM INSIDE MAIN LINE AFTER TAPPING.
7. CONTRACTOR SHALL ATTACH PLACARD TO ALL COMBO AIR VALVE METER BOX LIDS, INFORMATION AS FOLLOWS: AS BUILT PIPE STATION, VALVE SIZE, "COMBO ARV", PIPE SIZE AND MATERIAL. SEE DETAIL, THIS SHEET.
8. DO NOT TAP FUSIBLE OR RESTRAINED PIPE. USE ALTERNATIVE CONFIGURATION "A" IN LIEU OF TAPPING.
9. APPLY CATHODIC PROTECTION TO ALL NON-STAINLESS METALLIC COMPONENTS IN CONTACT WITH SOIL LOCATED WITHIN CORROSIVE SOIL ZONES, AS DESIGNATED IN THE PLANS AND/OR SPECIFICATIONS.
10. ALL MATERIALS RATED TO AT LEAST THE PIPE PRESSURE RATING UNLESS OTHERWISE NOTED.
11. PIPE SECTION SHALL NOT BE BENT AT COMBO AIR VALVE INSTALLATION LOCATIONS, SEE DETAIL THIS SHEET.



ELEVATION VIEW

PIPE BENDING RESTRICTIONS FOR USE WITH TAPPING SADDLE

N.T.S.

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www.soudermiller.com

Client: The Navajo Nation
Location: Standing Rock, NM

COMBINATION AIR VALVE DETAILS
NAVAJO GALLUP WATER SUPPLY PROJECT
BEACON BISTI N9 - REACH 10.2.1
McKINLEY COUNTY, NEW MEXICO

90% REVIEW
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2/2023

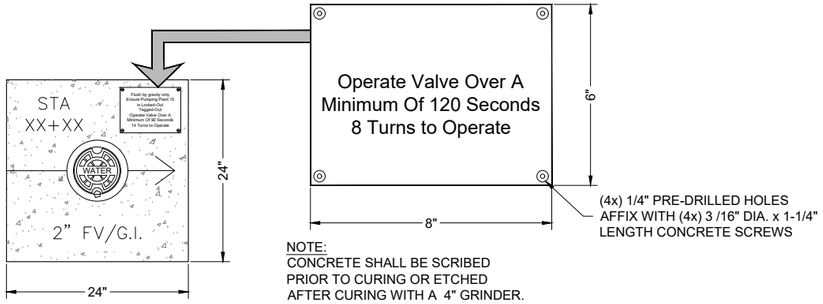
Designed	Drawn	Checked
TTT	AAV	JMG

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Date: February 2023
Scale: Horiz: AS SHOWN
Vert: N/A
Project No: 6922268
Sheet: DT-7

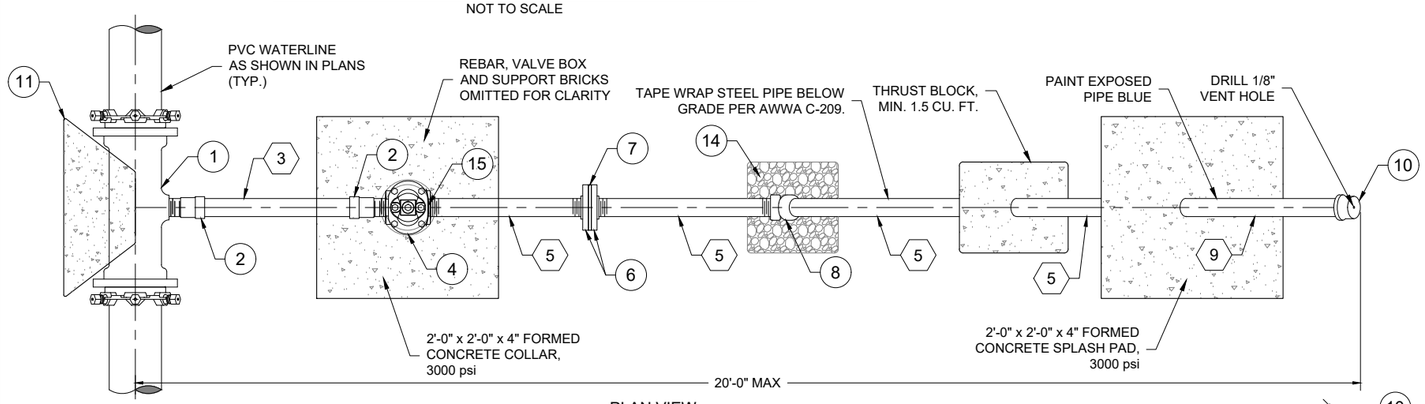
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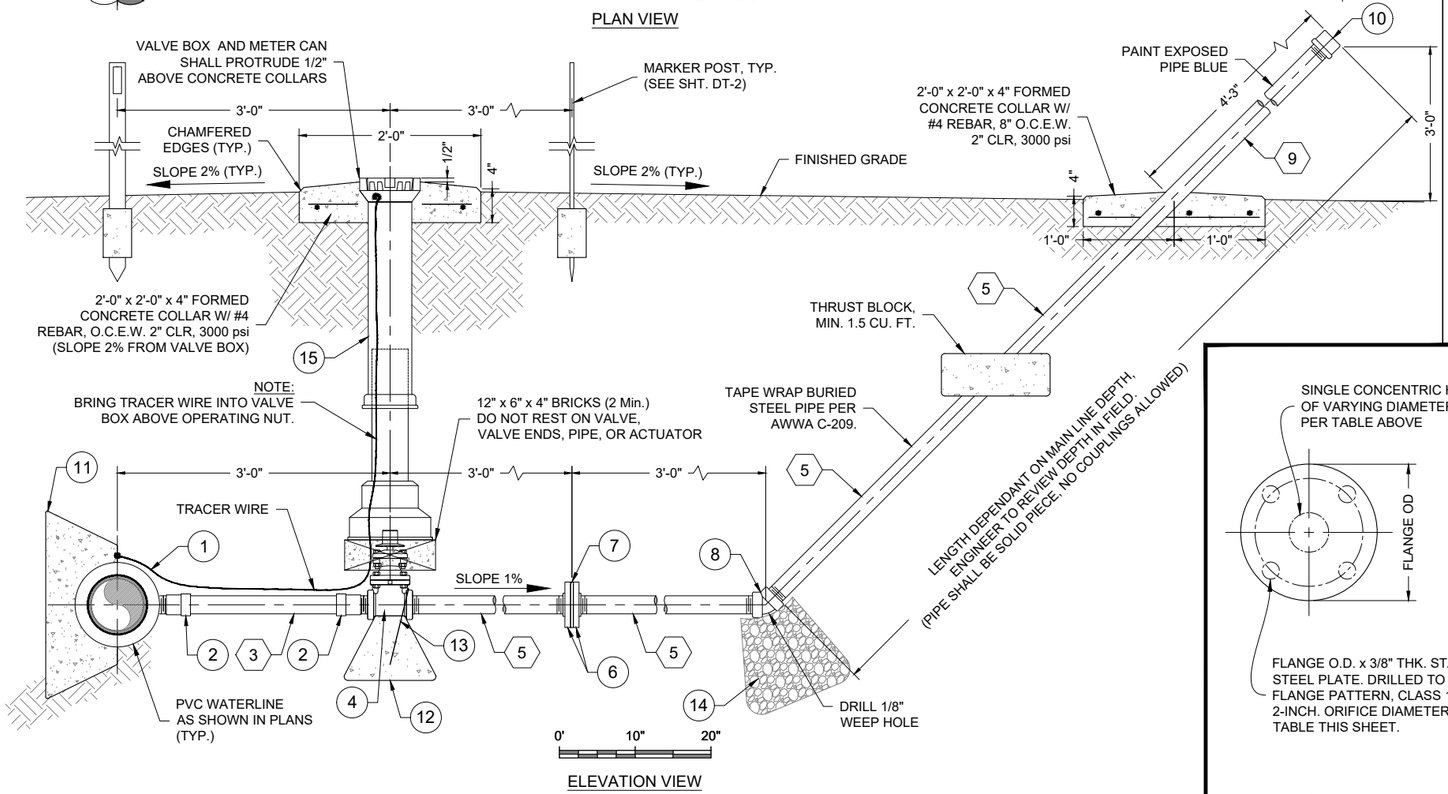
NOTE:
CONCRETE SHALL BE SCRIBED
PRIOR TO CURING OR ETCHED
AFTER CURING WITH A 4" GRINDER.

COLLAR SCRIBING AND WARNING PLACARD DETAIL

NOT TO SCALE



PLAN VIEW



ELEVATION VIEW

2" FLUSH VALVE WITH ABOVE-GRADE DISCHARGE DETAIL

KEYED NOTES - 2" FLUSH VALVE WITH ABOVE GRADE DISCHARGE AND ORIFICE PLATE

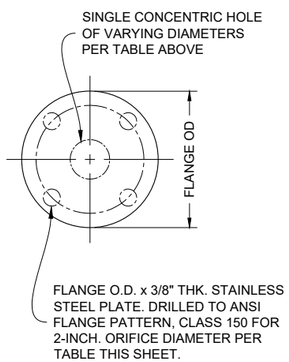
Item No.	DESCRIPTION
1	6" x 2" MJ TAPPED TEE, D.I., 350 psi
2	2" ADAPTER, PVC, SLIP-GASKET x NPT, SDR-21, 200 psi
3	2" PVC, SDR-21, 200 psi
4	2" GATE VALVE, FBE COATED, NPT, W/ 2" OPERATING NUT, 250 psi
5	2" G.I. PIPE, STANDARD WALL, NPT, TAPE COATED BELOW GRADE
6	2" G.I.-HUB, FLAT FACED, COMPANION FLANGE, NPT, SS 304, ANSI CLASS 300
7	3/8" THK. STAINLESS STEEL ORIFICE PLATE, ANSI CLASS 300 DRILLING PATTERN (SEE TABLE THIS SHEET FOR ORIFICE SIZE)
8	2" G.I. 45° ELL, NPT, 300 psi
9	2" G.I. PIPE, STANDARD WALL, NPT, PAINTED BLUE ABOVE GRADE
10	2" G.I. CAP, NPT, 300 psi, W/ 1/8" VENT HOLE
11	THRUST BLOCK (SEE DETAIL DT-3)
12	1'-0" x 1'-0" x 1'-0" CONCRETE BLOCK, 3000 psi
13	#4 REBAR RESTRAINT
14	ROUNDED ROCK (1.5 CU. YD.)
15	VALVE BOX SLIP TYPE WITH LOCKING CAST IRON COVER (SEE DETAIL DT-6)

NOTES:
1. ALL FLANGES SHALL BE ANSI CLASS 125 or 150.
2. ALL NON STAINLESS STEEL PIPE AND FITTINGS SHALL BE TWO-PART EPOXY COATED, INTERIOR AND EXTERIOR. ALL NON STAINLESS METALLIC PIPE IN CONTACT WITH SOIL SHALL ALSO BE COLD APPLIED TAPE-COATED PER AWWA C-209 AND SPECIFICATIONS.
3. ORIENTATION AND LOCATION OF OUTLET TO BE DETERMINED IN FIELD BY ENGINEER.
4. APPLY CATHODIC PROTECTION TO ALL BURIED METALLIC WATER-CARRYING COMPONENTS LOCATED WITHIN CORROSIVE SOIL ZONES, AS DESIGNATED IN THE PLANS AND/OR SPECIFICATIONS.
5. ALL STEEL PIPE AND FITTINGS SHALL BE STANDARD WALL.
6. ALL COMPONENTS SHALL REMAIN WITHIN THE 40' PERMANENT RIGHT-OF-WAY.
7. ALL MATERIALS RATED TO AT LEAST MAINLINE PIPE PRESSURE RATING, UNLESS OTHERWISE NOTED.
8. SEE TABLE THIS SHEET FOR ORIFICE PLATE DRILLING REQUIREMENTS.

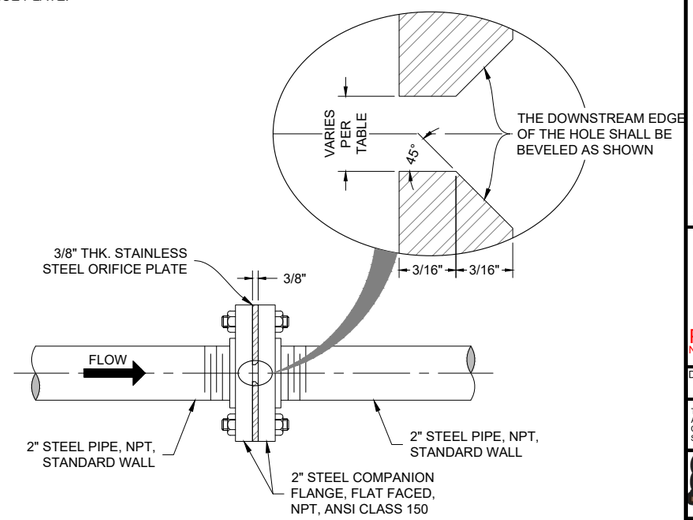
SUMMARY OF FLUSH VALVE ORIFICE PLATE DRILLING

Station	Elevation	Flush Valve Size	Orifice Plate Hole Ø (in.)
0+25	6243	2"	1.20
76+78	6298	2"	1.20
184+10	6544	2"	1.50

NOTES:
1. HOLE TO BE DRILLED CENTERED ON THE ORIFICE PLATE.



ORIFICE PLATE
NOT TO SCALE



2" FLUSH VALVE

ORIFICE PLATE ASSEMBLY
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Revision | Date | Description | By | Chkd

Client: The Navajo Nation
Location: Standing Rock, NM

2-INCH FLUSH VALVE WITH RISER DETAIL
NAVAJO GALLUP WATER SUPPLY PROJECT
BEACON BISTI N9 - REACH 10.2.1
McKINLEY COUNTY, NEW MEXICO

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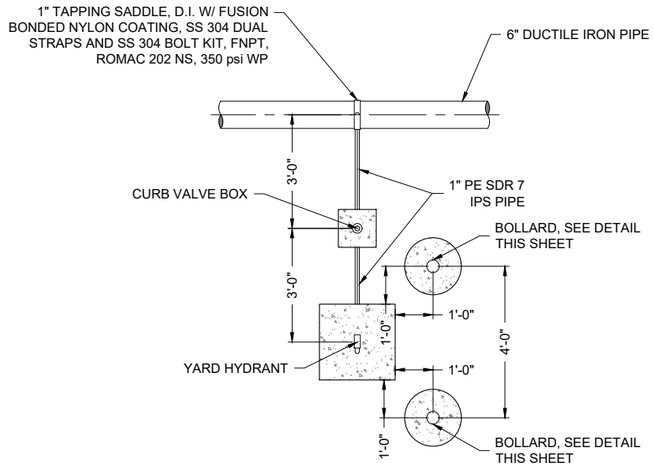
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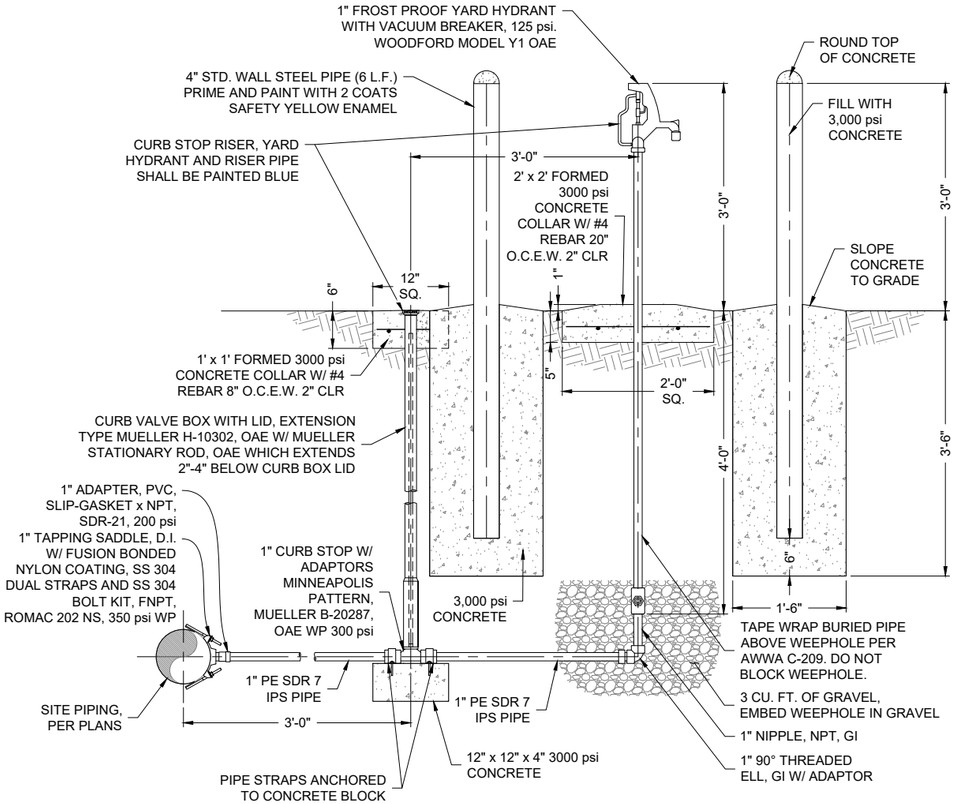
Date: February 2023
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Project No: 6922268
Sheet: DT-8

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YARD HYDRANT AND ASSEMBLY PLAN VIEW DETAIL

NOT TO SCALE



YARD HYDRANT AND ASSEMBLY DETAIL

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Location: Standing Rock, NM
Client: The Navajo Nation

SENSOR LINE & YARD HYDRANT DETAILS
NAVAJO GALLUP WATER SUPPLY PROJECT
BEACON BISTI N9 - REACH 10.2.1
McKINLEY COUNTY, NEW MEXICO

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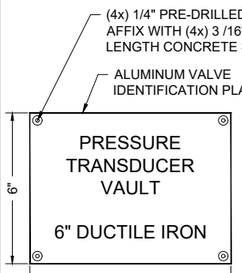
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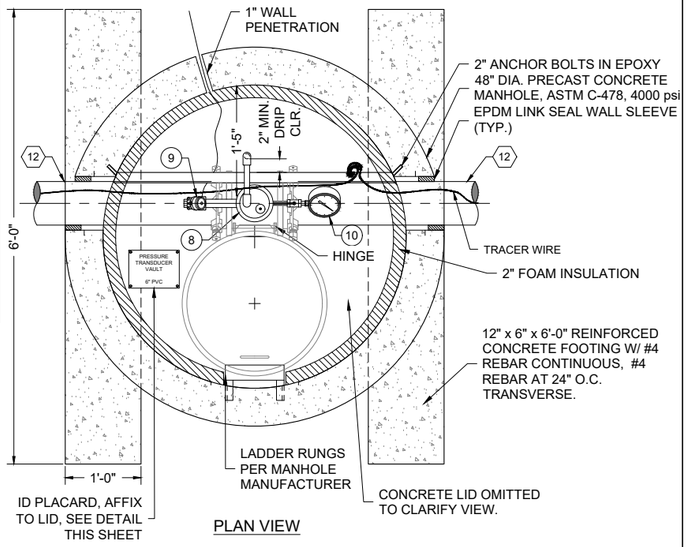
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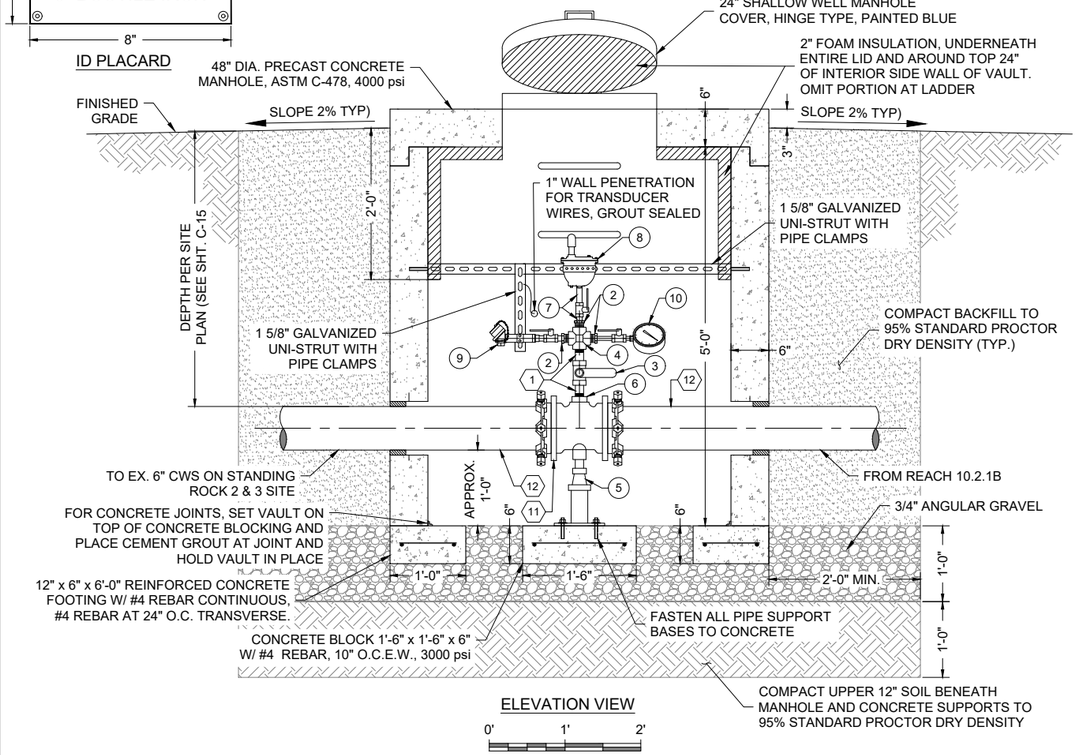
KEYED NOTES - PRESSURE TRANSDUCER VAULT	
Item No.	Description
1	1" STEEL PIPE, NPT, SS 304, SCHEDULE 40
2	1" x 1/2" REDUCING BUSHING, SS 304, NPT, SCHED. 40
3	1" BALL VALVE, NPT SS 304
4	1" CROSS, SS 304, NPT, SCHEDULE 40
5	ADJUSTABLE PIPE SUPPORT W/ U-SHAPED CRADLE
6	2" MALE x 1" FEMALE REDUCING BUSHING, NPT, SS 304
7	1/2" SS 304 PIPE, NPT, SCHEDULE 40
8	AIR RELEASE VALVE, 1/2" VALMATIC 15ASV, 175 psi W/ 1/2" SS 304 BALL VALVE, 1500 psi & 1/2" SCHEDULE 80 PVC RETURN (SECURED TO UNISTRUT SUPPORT)
9	HORIZONTAL MOUNT PRESSURE TRANSDUCER 0-30 psi, AMETEK 88C, W/ 1/2" SS 304 BALL VALVE, 2000 psi (SECURED TO UNISTRUT SUPPORT)
10	PRESSURE GAUGE 0-25 psi W/ 1/4" SS 304 BALL VALVE, 2000 psi, 1" x 1/4" SS 304 REDUCING BUSHING & 1/4" SS 304 PIPE, NPT
11	6" x 2" MJ x MJ TAPPED TEE (ROTATE UPWARDS)
12	6" DUCTILE IRON PIPE

NOTE:
1. ALL STAINLESS STEEL PIPE AND FITTINGS SHALL HAVE A WORKING PRESSURE OF AT LEAST 350 psi, UNLESS OTHERWISE NOTED.





PLAN VIEW

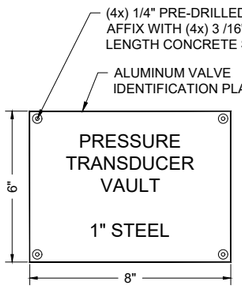


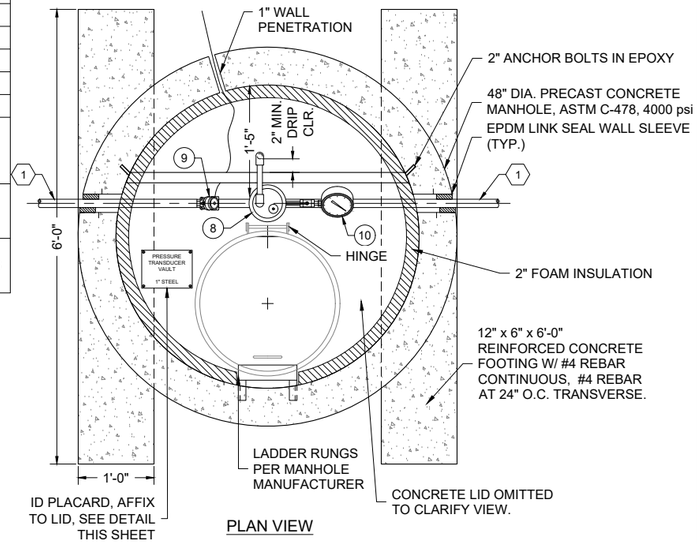
ELEVATION VIEW

PRESSURE TRANSDUCER VAULT DETAIL
STANDING ROCK TANK #2 AND #3 SITE

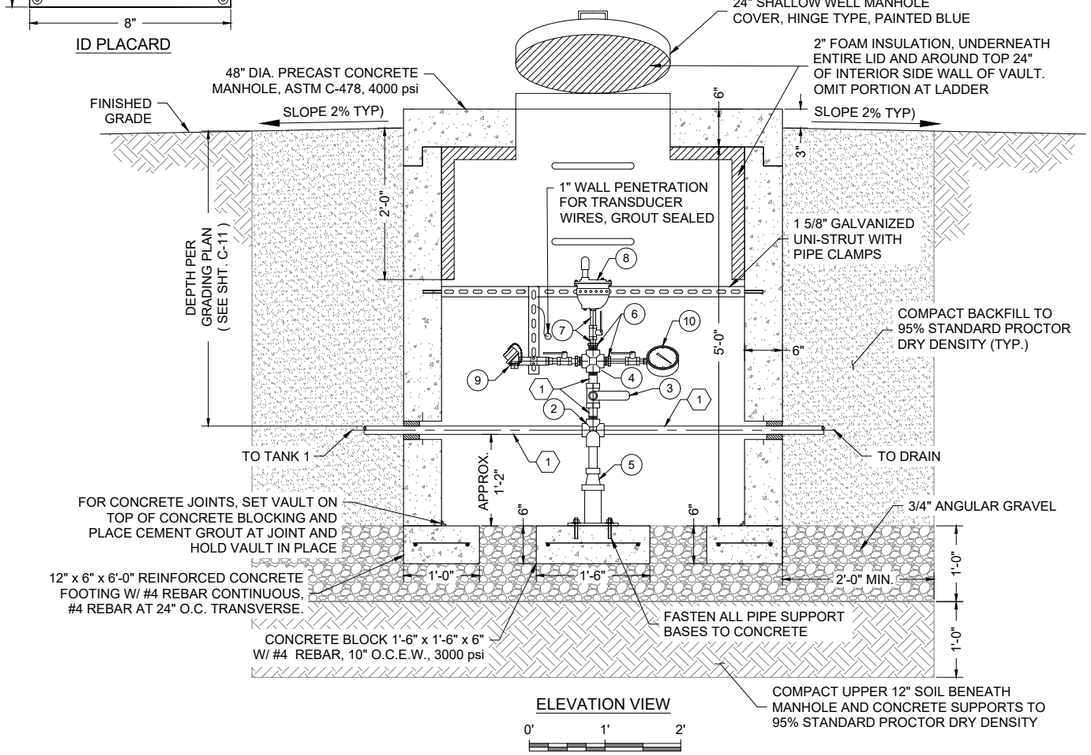
KEYED NOTES - PRESSURE TRANSDUCER VAULT	
Item No.	Description
1	1" STEEL PIPE, NPT, SS 304, SCHEDULE 40
2	1" TEE, SS 304, NPT, SCHEDULE 40
3	1" BALL VALVE, NPT SS 304
4	1" CROSS, SS 304, NPT, SCHEDULE 40
5	ADJUSTABLE PIPE SUPPORT W/ U-SHAPED CRADLE
6	1" x 1/2" REDUCING BUSHING, SS 304, NPT, SCHED. 40
7	1/2" SS 304 PIPE, NPT, SCHEDULE 40
8	AIR RELEASE VALVE, 1/2" VALMATIC 15ASV, 175 psi W/ 1/2" SS 304 BALL VALVE, 1500 psi & 1/2" SCHEDULE 80 PVC RETURN (SECURED TO UNISTRUT SUPPORT)
9	HORIZONTAL MOUNT PRESSURE TRANSDUCER 0-30 psi, AMETEK 88C, W/ 1/2" SS 304 BALL VALVE, 2000 psi (SECURED TO UNISTRUT SUPPORT)
10	PRESSURE GAUGE 0-25 psi W/ 1/4" SS 304 BALL VALVE, 2000 psi, 1" x 1/4" SS 304 REDUCING BUSHING & 1/4" SS 304 PIPE, NPT

NOTE:
1. ALL STAINLESS STEEL PIPE AND FITTINGS SHALL HAVE A WORKING PRESSURE OF AT LEAST 350 psi, UNLESS OTHERWISE NOTED.





PLAN VIEW



ELEVATION VIEW

PRESSURE TRANSDUCER VAULT DETAIL
STANDING ROCK TANK #1 SITE

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Location: Standing Rock, NM
Client: The Navajo Nation

TRANSDUCER VAULT DETAILS
NAVAJO GALLUP WATER SUPPLY PROJECT
BEACON BISTI N9 - REACH 10.2.1
McKINLEY COUNTY, NEW MEXICO

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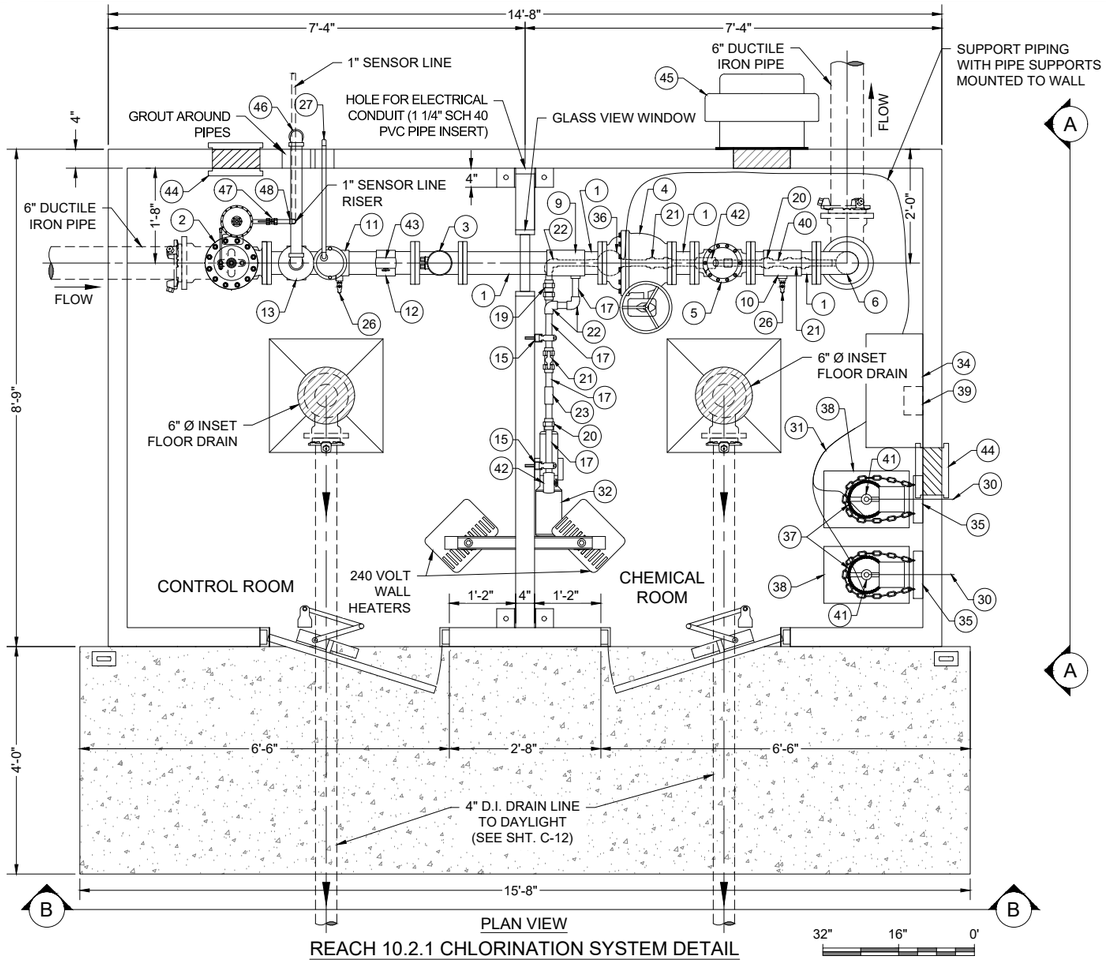
Designed	Drawn	Checked
TTT	MvH/AaV	JMG

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Vert: N/A
Project No: 6922268
Sheet: DT-10

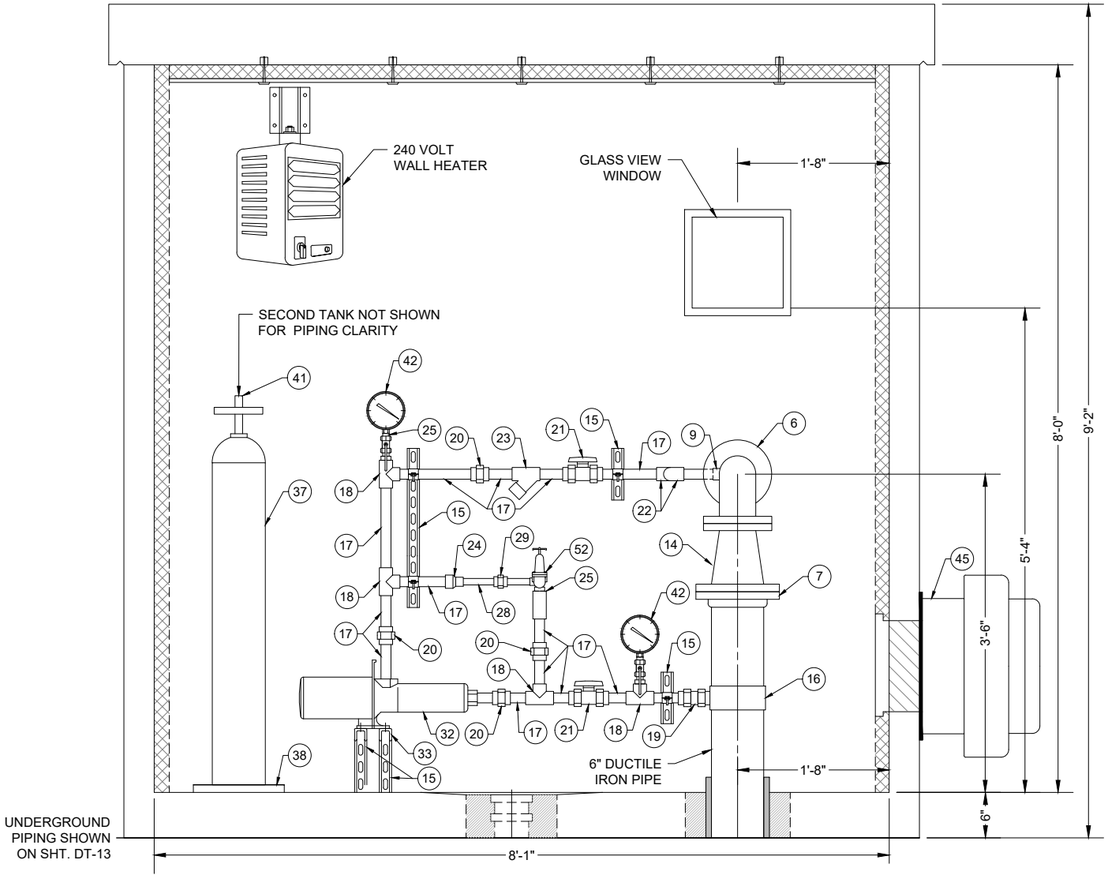
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PLAN VIEW

REACH 10.2.1 CHLORINATION SYSTEM DETAIL

32" 16" 0'



END VIEW SECTION A-A

REACH 10.2.1 CHEMICAL ROOM CHLORINATION SYSTEM DETAIL

20" 10" 0'

1	4" DUCTILE IRON PIPE
2	4" FLANGED FULL-PORT ELECTRONIC FLOW CONTROL VALVE, CLA-VAL 131A-57 FHBYCSKCKOP-X105LCW-N (0-160 PSI INLET/OUTLET GAUGES) W/ REDUNDANT HYDRAULIC PILOT
3	4" FLANGED ELECTRONIC FLOW METER, ELSTER EVOQ4, MAINTAIN STRAIGHT PIPE >30" IN FRONT AND >12" BEHIND CENTER OF METER.
4	4" BALL VALVE, FL x FL W/ GEARED ACTUATOR AND LOCK AND CHAIN TO PREVENT OPENING WHILE PIPELINE IS FLOWING. DI W/ FLANGE ISOLATION KIT.
5	4" CHECK VALVE, SURGE BUSTER SERIES 7200 (O.A.E.)
6	4" 90° FL x FL ELBOW, DI
7	6" FLANGE ISOLATION KIT
8	4" x 2" TAPPING SADDLE, DI
9	4" x 1" TAPPING SADDLE, SS 304
10	4" x 3/4" TAPPING SADDLE, SS 304
11	4" x 3/4" TAPPING SADDLE, DI
12	4" x 1/4" TAPPING SADDLE, DI
13	2" VACUUM BREAKER WITH 1" ARV ASSEMBLY, SEE DETAIL "A" (SHT. DT-12). VENT VACUUM BREAKER AND ARV OUTSIDE BUILDING.
14	6" x 4" REDUCER, FL x FL DI, WP 250 PSI
15	1 5/8" UNISTRUT, STAINLESS STEEL, WITH PIPE SUPPORTS
16	6" x 1" TAPPING SADDLE, SS 316
17	1" PVC SCHED 80 PIPE
18	1" TEE, PVC SCHED 80
19	1" TRUE UNION CHECK VALVE, PVC SCHED 80
20	1" UNION, PVC SCHED 80
21	1" TRUE UNION BALL VALVE, PVC SCHED 80
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25	1" x 1/2" PVC BUSHING
26	3/4" HOSE BIB WITH VACUUM BREAKER, NPT, SMOOTH END
27	1/2" 90° ELL & 1/2" GALVANIZED STEEL PIPE (PAINTED BLUE) WITH DOWNSPOUT
28	1/2" PVC SCHED 80 PIPE

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30	1/2" PE VENT TUBING (WALL PENETRATION MUST BE BELOW REGULATORS)
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33	SS UNISTRUT PEDESTAL FOR CHLORINATION BOOSTER PUMP. DIMENSIONS TO BE DETERMINED UPON APPROVAL OF PUMP SUBMITTAL BY CONTRACTOR. 9" ABOVE FLOOR.
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36	CHLORINE INJECTOR, WALLACE & TIERNAN S10K W/ 99D THROAT/TAIL PIECE (O.A.E.) W/ PVC/TEFLON DIAPHRAM VALVE ON VACUUM LINE WITH PEDESTAL. SUPPORT WITH UNISTRUTS.
37	CHLORINE GAS CYLINDER, 150 LB (DO NOT INSTALL)
38	ELECTRONIC CHLORINE CYLINDER SCALE, FORCE FLOW GR150-2 W/ FORCE FLOW SOLO G2 DIGITAL INDICATOR (O.A.E.), BOLTED TO FLOOR
39	CHLORINE GAS DETECTOR SENSOR/TRANSMITTER, WALLACE & TIERNAN ACUTEC 35 W/ AUTOTEST (O.A.E.), MOUNTED 6" ABOVE FLOOR, LOCATION TBD BY ENGINEER IN FIELD. CHLORINE GAS DETECTOR RECEIVER, WALLACE & TIERNAN ACUTEC 35 (O.A.E.) LOCATION AS INDICATED IN ELECTRICAL PLANS OR TBD BY ENGINEER IN FIELD.
40	INSERTION DIFFUSER, MTE (O.A.E.)
41	VACUUM REGULATOR, WALLACE & TIERNAN 210S (O.A.E.)
42	PRESSURE GAUGE, 0-100 PSI, WITH PVC/TEFLON DIAPHRAM SEAL AND 1/2" BALL VALVE, STAINLESS STEEL
43	PRESSURE GAUGE, 0-100 PSI WITH ISOLATION 1/4" SS BALL VALVE
44	LOUVERED VENT W/ BACKDRAFT DAMPER McMASTER CARR #2039 KI, W/ EPOXY GREY PAINT
45	19 -1/2" 430 CFM EXHAUST FAN WITH BACKDRAFT DAMPER
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NOTES:

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5. ALL BOLTS, NUTS AND WASHERS IN CHEMICAL ROOM SHALL BE 316 SS.
6. ALL VALVES WHICH MAY DISCHARGE WATER (CONTROL VALVE AND PRESSURE RELEASE VALVE) SHALL HAVE 1/2" GI DISCHARGE PIPE FROM VALVE OUTLET TO FLOOR DRAIN. DISCHARGE PIPING SHALL BE ROUTED ALONG WALL TO AVOID BLOCKING ACCESS TO OTHER COMPONENTS AND SHALL BE ATTACHED TO WALL WITH PIPE CLAMPS AND 1 5/8" UNISTRUTS FOR SUPPORT. PAINT GI PIPE BLUE. DISCHARGE PIPING NOT SHOWN FOR CLARITY.
7. ALL MATERIALS SHALL BE RATED TO AT LEAST 125 psi, UNLESS OTHERWISE NOTED.
8. ALL FLANGES SHALL BE ANSI CLASS 150 (STEEL) OR ANSI CLASS 125 (IRON).
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12. ALL STAINLESS STEEL PIPE AND FITTINGS SHALL HAVE A WORKING PRESSURE OF AT LEAST 350 psi, UNLESS OTHERWISE NOTED.

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Revision	Date	Description	By	Chkd

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Albuquerque, NM 87113
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www.soudermiller.com

Client: The Navajo Nation
Location: Standing Rock, NM

CHLORINATION SYSTEM DETAILS (1 OF 2)
NAVAJO GALLUP WATER SUPPLY PROJECT
BEACON BISTI N9 - REACH 10.2.1
MCKINLEY COUNTY, NEW MEXICO

90% REVIEW
DRAFT
PRELIMINARY
NOT FOR CONSTRUCTION
2/2023

Designed	Drawn	Checked
TTT	AAV	JMG

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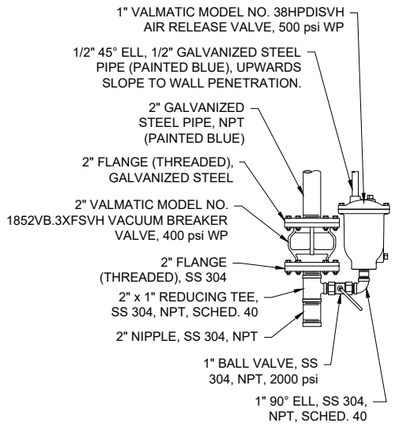
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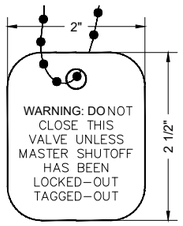
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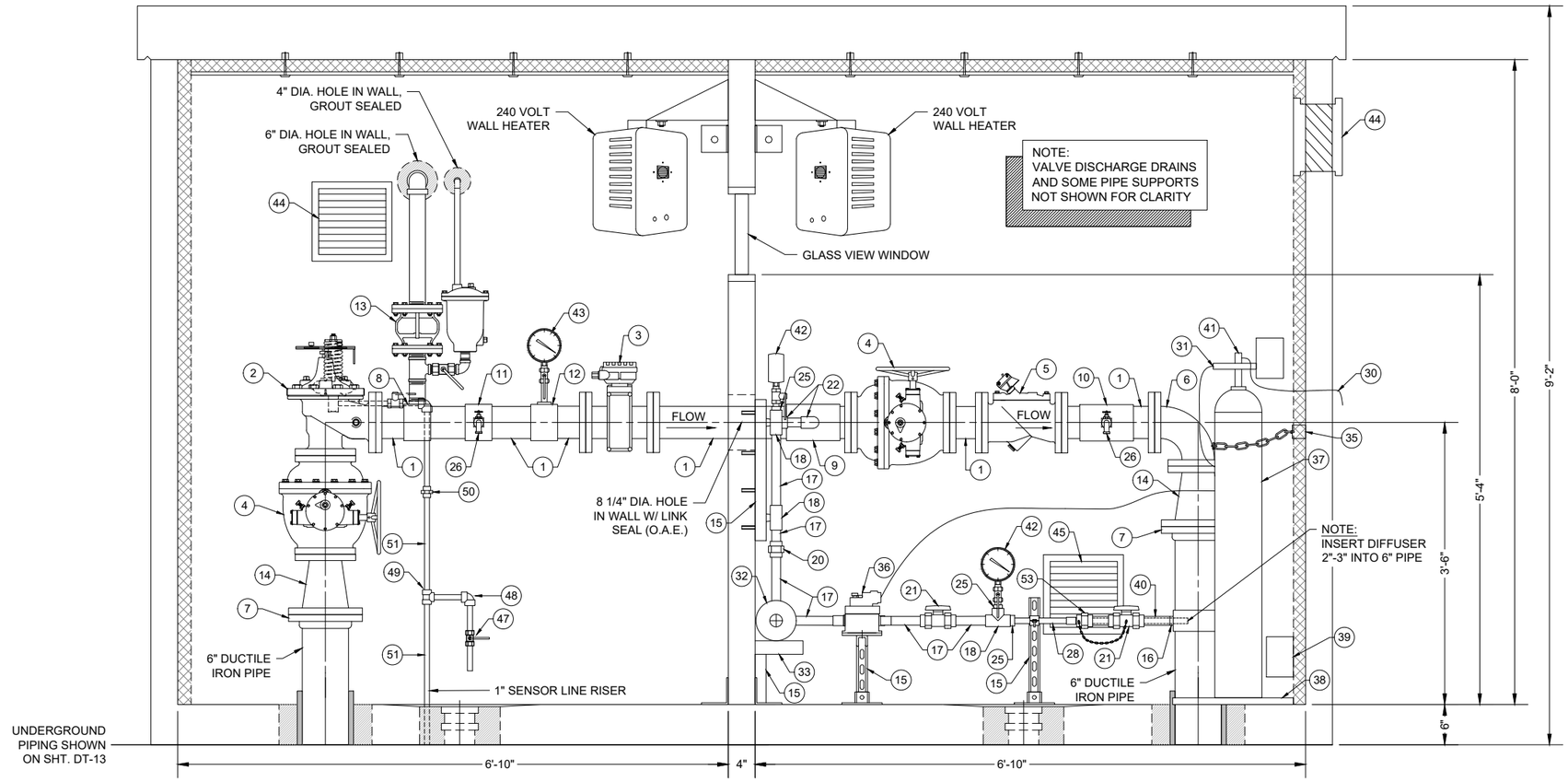
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DETAIL "A"
2" VACUUM BREAKER
W/ 1" ARV ASSEMBLY



VALVE WARNING TAG DETAIL
(HANG FROM BALL VALVES)



ELEVATION VIEW SECTION B-B
REACH 10.2.1 CONTROL ROOM CHLORINATION SYSTEM DETAIL

ELEVATION VIEW SECTION B-B
REACH 10.2.1 CHEMICAL ROOM CHLORINATION SYSTEM DETAIL

20" 10" 0'

1	4" DUCTILE IRON PIPE
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Client: The Navajo Nation
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CHLORINATION SYSTEM DETAILS (2 OF 2)
NAVAJO GALLUP WATER SUPPLY PROJECT
BEACON BISTI N9 - REACH 10.2.1
McKINLEY COUNTY, NEW MEXICO

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2/2023

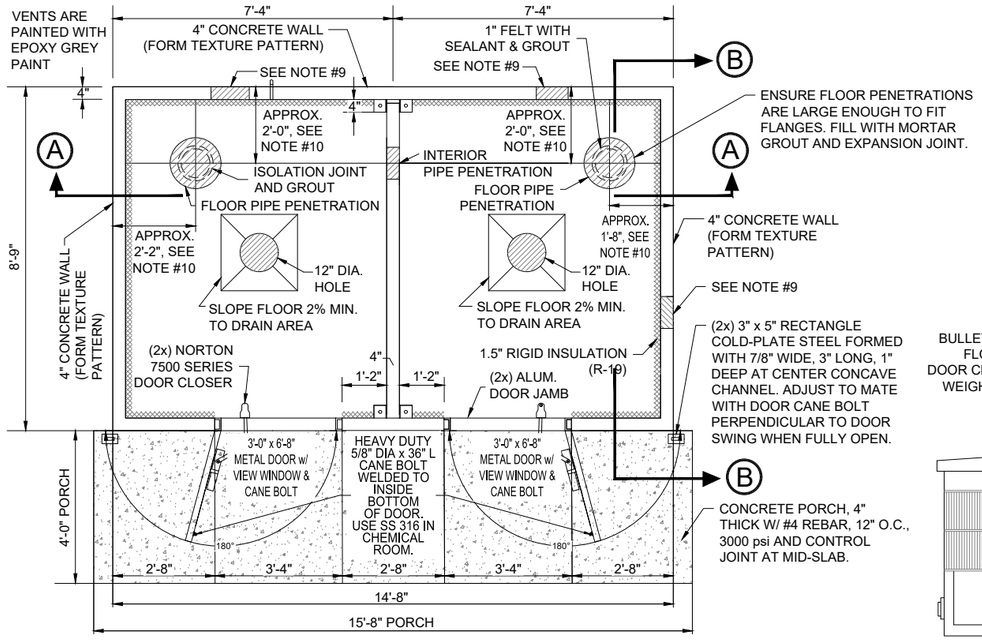
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TTT	AAV	JMG

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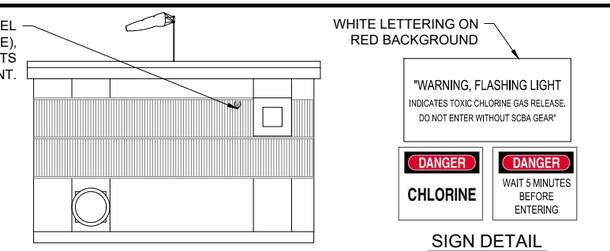
811 Know what's BELOW. CALL before you dig.

Date: February 2023
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Project No: 6922268
Sheet: DT-12

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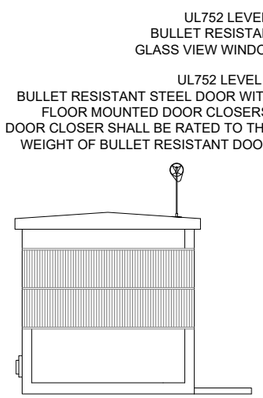


PLAN VIEW OF BUILDING
NOT TO SCALE

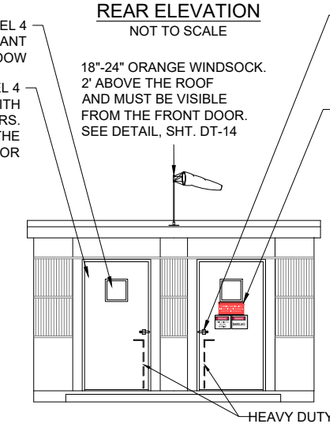


REAR ELEVATION
NOT TO SCALE

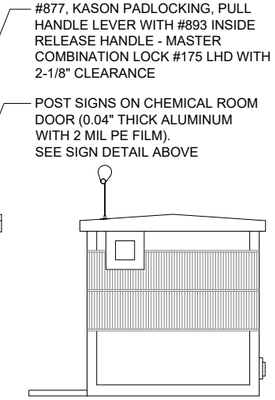
SIGN DETAIL



LEFT SIDE ELEVATION
NOT TO SCALE



FRONT ELEVATION
NOT TO SCALE



RIGHT SIDE ELEVATION
NOT TO SCALE

NOTES

1. THE GOVERNING CODE IS THE INTERNATIONAL BUILDING CODE, 2015 EDITION.

   RISK CATEGORY I

   MINIMUM DESIGN LOADS:
   - FLOOR DEAD LOAD = 125 PSF
   - FLOOR LIVE LOAD = 30 PSF
   - ROOF DEAD LOAD = 10 PSF
   - ROOF LIVE LOAD = 20 PSF
   - GROUND SNOW LOAD = 15 PSF

   WIND
   - BASIC WIND SPEED = 105 MPH
   - EXPOSURE C

   SEISMIC
   - DESIGN CATEGORY B
   - SITE SOIL CLASS D
   - Ss = 0.195
   - S1 = 0.058

2. BUILDING FOUNDATION, SUBFOUNDATION, AND SITE GRADING SHALL BE OVEREXCAVATED STRUCTURAL FILL ONLY. REFERENCE GEOTECHNICAL REPORT, PROVIDED AS APPENDIX TO CONTRACT DOCUMENTS. REFER TO GEOTECHNICAL REPORT FOR FURTHER INFORMATION.

3. ALL SITE-CAST CONCRETE SHALL BE MADE WITH TYPE II (LOW ALKALI RESISTIVE) CEMENT AND SHALL ATTAIN A MINIMUM COMPRESSIVE STRENGTH OF 3,000 psi WITHIN 28 DAYS. THE MIX DESIGN SHOULD INCLUDE 5% (±1%) AIR ENTRAINMENT AND SHOULD BE PLACED AND CURED IN ACCORDANCE WITH THE ACI MANUAL OF CONCRETE PRACTICE, VOLUMES 1 THRU 5. SLUMP AT THE TIME OF PLACEMENT SHOULD NOT EXCEED FOUR (4) INCHES, AND MECHANICAL VIBRATION SHOULD BE EMPLOYED FOR CONSOLIDATION TO ELIMINATE VOIDS AND HONEYCOMBING.

4. PRECAST CONCRETE COMPONENTS SHALL BE CERTIFIED BY THE SUPPLIER TO HAVE ATTAINED A MINIMUM STRENGTH OF 3,000 psi AT TRANSPORT TIME WITH FINAL CONCRETE STRENGTH TO BE AT LEAST 3,500 psi WITHIN 28 DAYS. VERIFICATION OF CONCRETE STRENGTH SHALL BE PROVIDED BY THE SUPPLIER UPON REQUEST AND SHALL BE CONFIRMED THROUGH CYLINDER BREAKS FROM NORMAL PRODUCTION PROCEDURES AND IN-HOUSE QUALITY CONTROL. A SET OF FOUR (4) CYLINDERS SHALL BE TAKEN AT RANDOM IN THE PLANT NOT LESS THAN ONCE DURING EACH WEEK OF PRODUCTION.

5. CONCRETE REINFORCING STEEL SHALL BE ASTM A-615 BILLET BARS, GRADE 40. BARS SHALL BE LAPPED AT LEAST THIRTY (30) BAR DIAMETERS AT SPLICES AND CORNER BARS SHALL BE PROVIDED TO MATCH HORIZONTAL REINFORCING.

6. STRUCTURAL STEEL, EMBEDMENT STEEL, AND CONNECTIONS SHALL CONFORM TO ASTM A-36. ALL EXPOSED STEEL PLATES AND CONNECTIONS SHALL BE PAINTED WITH ONE FIELD COAT OF COMPATIBLE PRIMER AND ONE COAT OF EPOXY PAINT.

7. FIELD WELDING SHALL BE PERFORMED USING E70XX ELECTRODES AND SHALL CONFORM TO STANDARDS OF THE AMERICAN WELDING SOCIETY FOR WELDING IN BUILDING CONSTRUCTION.

8. ALL DOOR FRAMES, FAN AND VENT ASSEMBLIES AND SLAB PENETRATION SHALL BE CAST INTO THEIR RESPECTIVE SLABS.

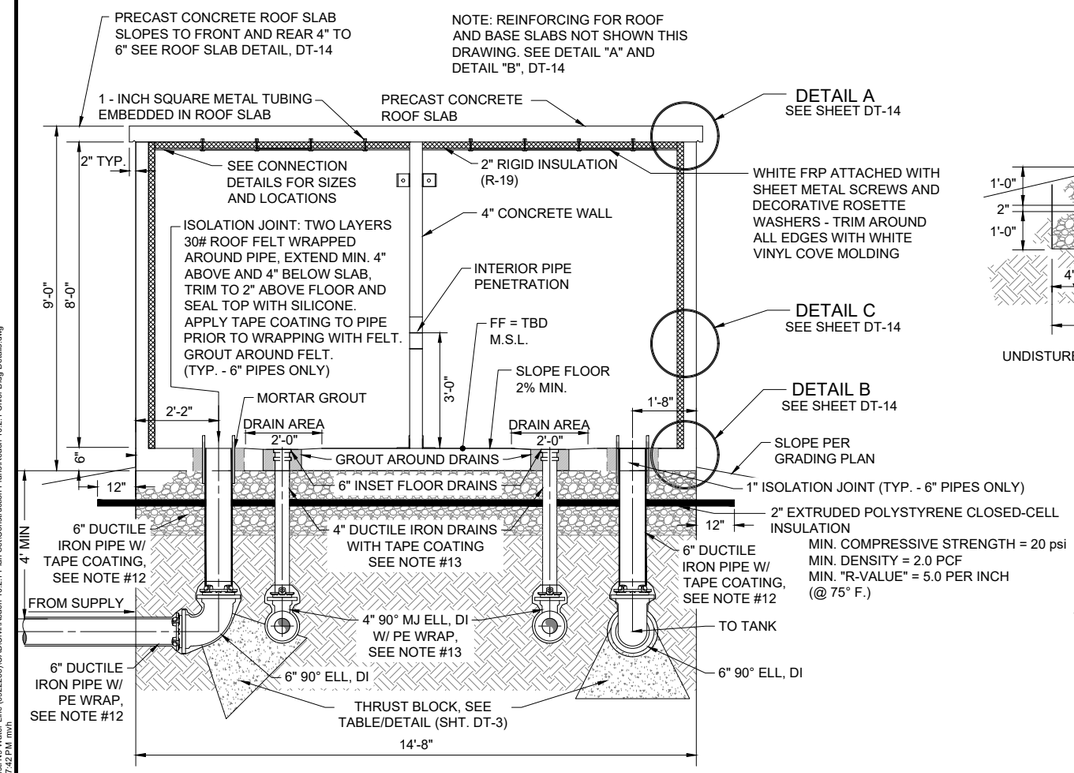
9. CONTRACTOR RESPONSIBLE TO DETERMINE SPACE REQUIREMENTS FOR PLUMBING TRAIN, AS WELL AS EXHAUST FAN, VENTS, AND ELECTRICAL CONDUITS, AND SUBMIT SHOP DRAWINGS OF BUILDING, INCLUDING LOCATIONS AND SIZES OF FLOOR, EXTERIOR WALL AND INTERIOR WALL PENETRATIONS, FOR ENGINEER'S APPROVAL PRIOR TO FABRICATING PRE-CAST CONCRETE BUILDING. ADEQUATE WALL CLEARANCE SHALL BE PROVIDED FOR O&M OF ALL FLANGES, VALVES AND OTHER APPURTENANCES.

10. ALL BURIED PIPE WITHIN 5 FEET OF BUILDING SHALL BE DUCTILE IRON, 350 psi, SOLID PIPE PIECES ONLY. NO DUCTILE IRON PIPE JOINTS ALLOWED.

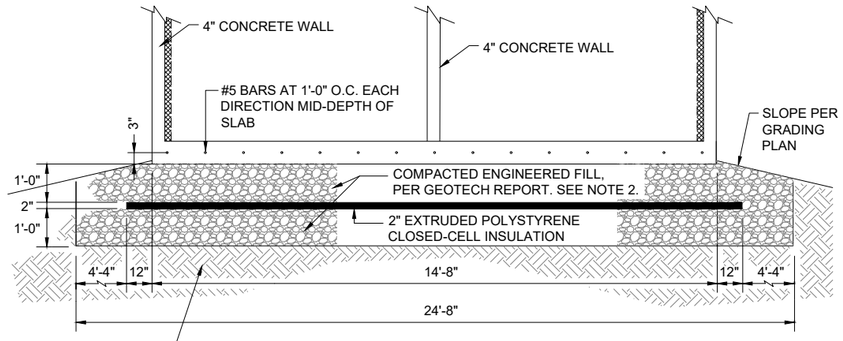
11. 4" DUCTILE IRON PIPE, TWO-PART EPOXY-COATED AND MORTAR LINED. COLD APPLIED TAPE-COATED PER SPECIFICATIONS FROM TOP OF FLOOR TO BURIED ELL. DOUBLE WRAP WITH POLYETHYLENE FROM ABOVE ELL TO PVC TRANSITION BEYOND FOUNDATION (TYP.).

12. 4" DUCTILE IRON DRAIN LINE, TWO-PART EPOXY-COATED AND MORTAR LINED. COLD APPLIED TAPE-COATED PER SPECIFICATIONS FROM INSET DRAIN TO BURIED ELL. DOUBLE WRAP WITH POLYETHYLENE FROM ABOVE ELL TO PVC TRANSITION BEYOND FOUNDATION (TYP.).

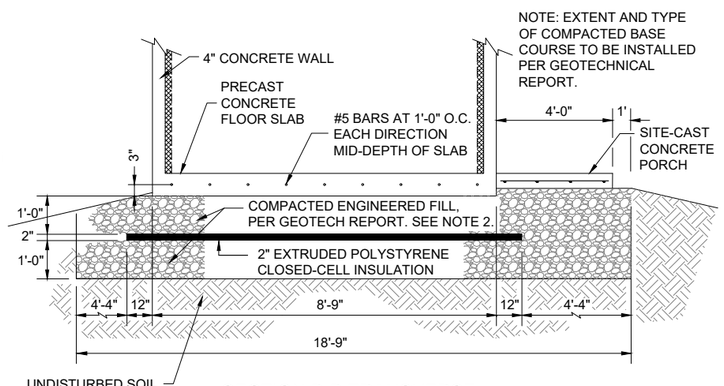
13. CONTRACTOR RESPONSIBLE FOR LOCATING AND DETERMINING ELECTRICAL CONDUIT PENETRATIONS.



SECTION VIEW OF BUILDING AND UNDERGROUND PIPING
NOT TO SCALE



SECTION A-A LONGITUDINAL
NOT TO SCALE



SECTION B-B TRANSVERSE
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Client: The Navajo Nation
Location: Standing Rock, NM

CHLORINATION BUILDING AND PIPING
NAVAJO GALLUP WATER SUPPLY PROJECT
BEACON BISTI N9 - REACH 10.2.1
McKINLEY COUNTY, NEW MEXICO

Revision	Date	Description	By	Chkd

90% REVIEW
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2/2023

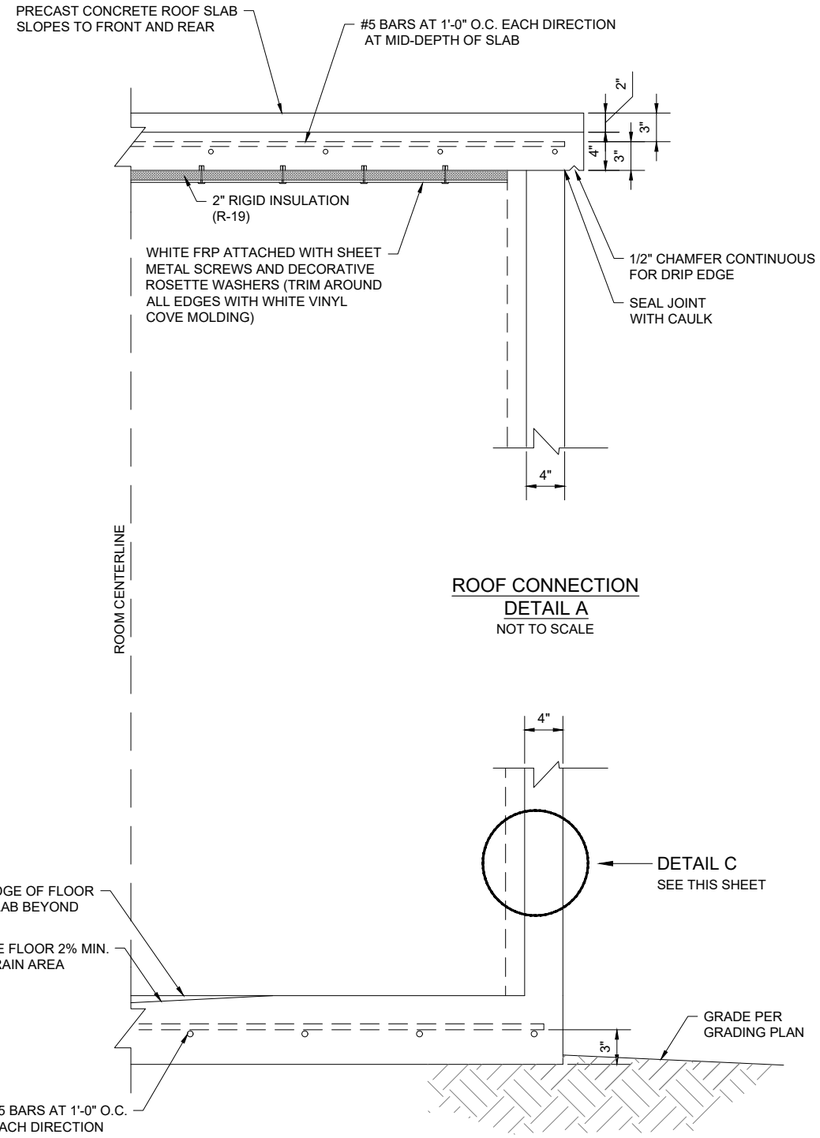
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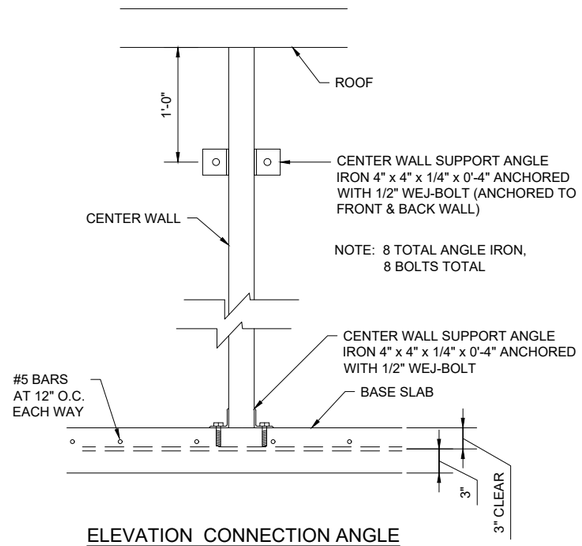
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Sheet: DT-13

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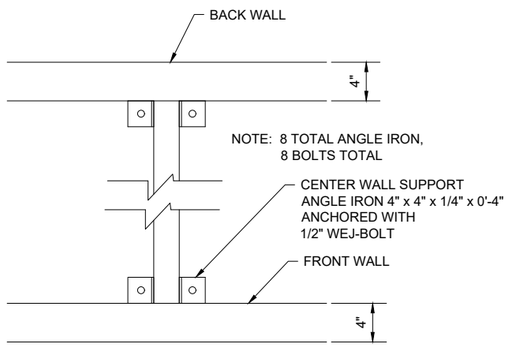


NOTE: REBAR AT LIFT JOINTS ARE #6 REBAR, 12" SEPARATION, CENTERED ON LIFT POINTS. REBARS ARE CENTERED THE ENTIRE LENGTH AND WIDTH OF SLAB (BOTH DIRECTIONS OF EACH LIFT POINT)

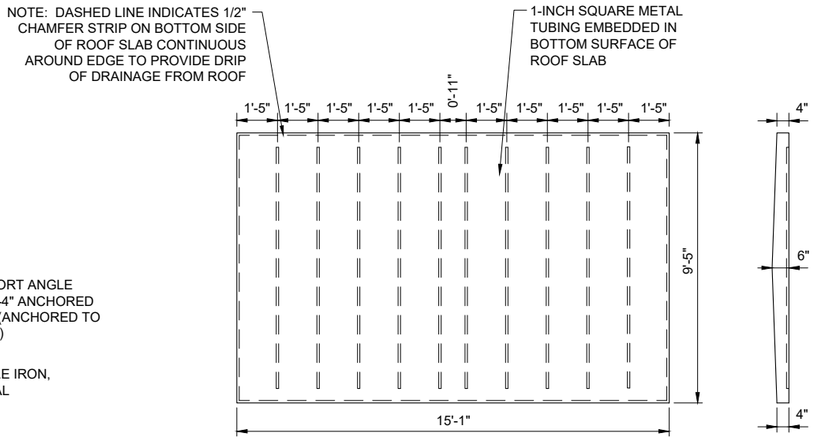
ROOF CONNECTION DETAIL A
NOT TO SCALE



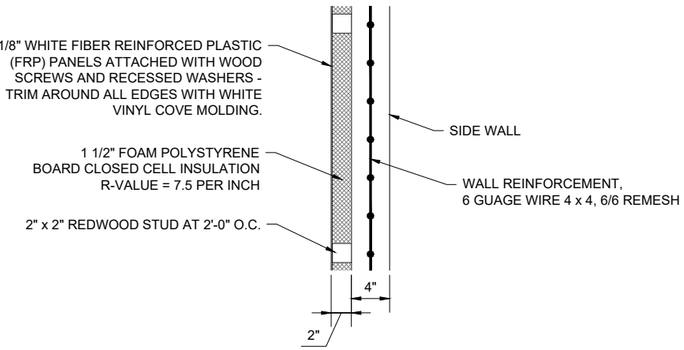
ELEVATION CONNECTION ANGLE IRONAT CENTER WALL (CHLORINATOR BUILDING ONLY)
NOT TO SCALE



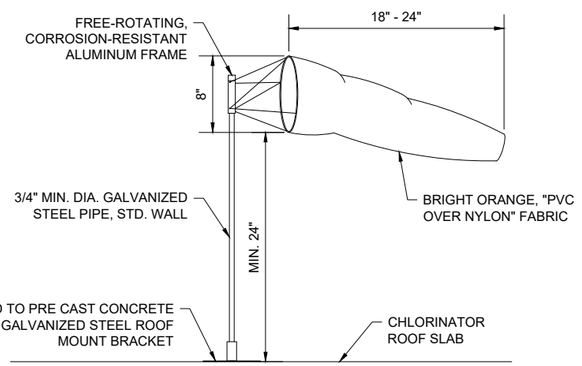
PLAN CONNECTION ANGLE IRON AT CENTER WALL (CHLORINATOR BUILDING ONLY)
NOT TO SCALE



ROOF SLAB
NOT TO SCALE



WALL SECTION DETAIL C
NOT TO SCALE



WIND SOCK DETAIL (CHLORINATOR BUILDING ONLY)
NOT TO SCALE

FLOOR CONNECTION DETAIL B
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Revision	Date	Description	By	Chkd

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Client: The Navajo Nation
Location: Standing Rock, NM

CHLORINATION & BOOSTER BUILDING DETAILS
NAVAJO GALLUP WATER SUPPLY PROJECT
BEACON BISTI N9 - REACH 10.2.1
McKINLEY COUNTY, NEW MEXICO

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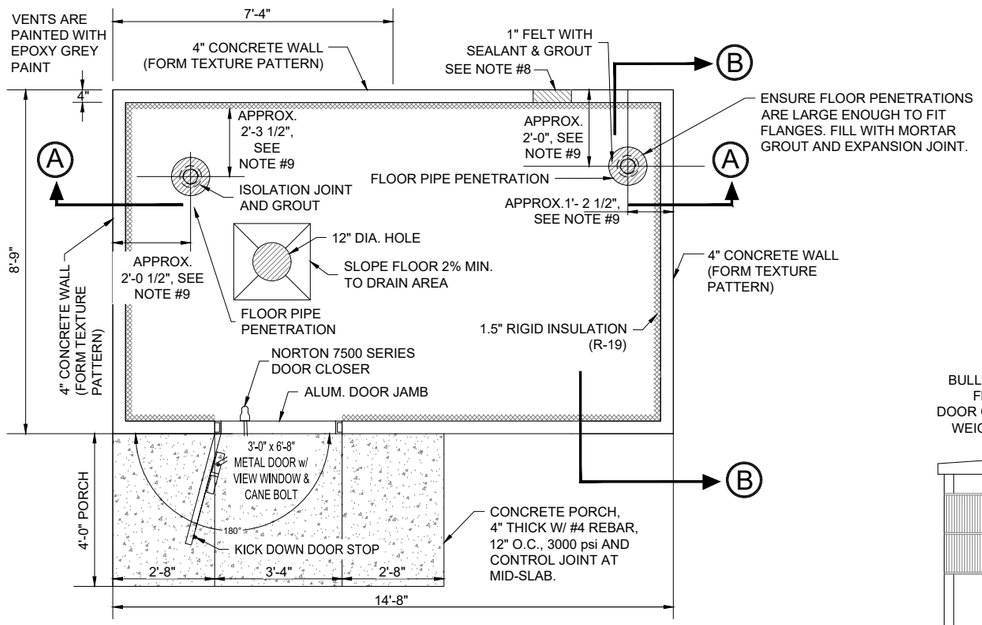
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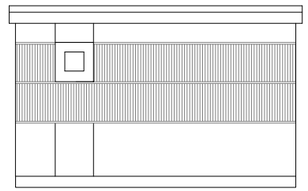
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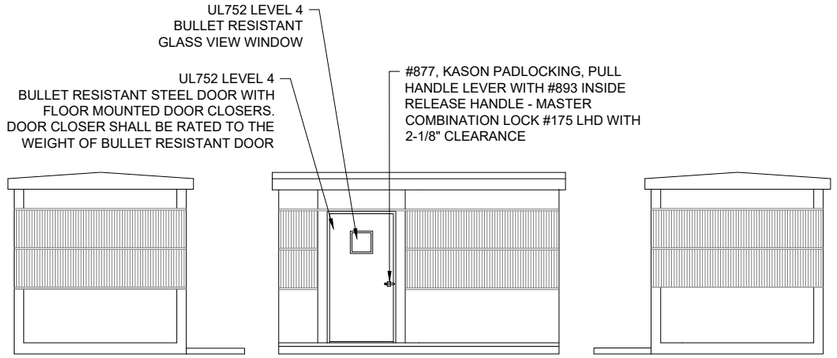
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Project No: 6922268
Sheet: DT-14

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NOTES

1. THE GOVERNING CODE IS THE INTERNATIONAL BUILDING CODE, 2015 EDITION.

   RISK CATEGORY I

   MINIMUM DESIGN LOADS:
   - FLOOR DEAD LOAD = 125 PSF
   - FLOOR LIVE LOAD = 30 PSF
   - ROOF DEAD LOAD = 10 PSF
   - ROOF LIVE LOAD = 20 PSF
   - GROUND SNOW LOAD = 15 PSF

   WIND
   - BASIC WIND SPEED = 105 MPH
   - EXPOSURE C

   SEISMIC
   - DESIGN CATEGORY B
   - SITE SOIL CLASS D
   - Ss = 0.195
   - S1 = 0.058

2. BUILDING FOUNDATION, SUBFOUNDATION, AND SITE GRADING SHALL BE OVEREXCAVATED STRUCTURAL FILL ONLY. REFERENCE GEOTECHNICAL REPORT, PROVIDED AS APPENDIX TO CONTRACT DOCUMENTS. REFER TO GEOTECHNICAL REPORT FOR FURTHER INFORMATION.

3. ALL SITE-CAST CONCRETE SHALL BE MADE WITH TYPE II (LOW ALKALI RESISTIVE) CEMENT AND SHALL ATTAIN A MINIMUM COMPRESSIVE STRENGTH OF 3,000 psi WITHIN 28 DAYS. THE MIX DESIGN SHOULD INCLUDE 5% (±1%) AIR ENTRAINMENT AND SHOULD BE PLACED AND CURED IN ACCORDANCE WITH THE ACI MANUAL OF CONCRETE PRACTICE, VOLUMES 1 THRU 5. SLUMP AT THE TIME OF PLACEMENT SHOULD NOT EXCEED FOUR (4) INCHES, AND MECHANICAL VIBRATION SHOULD BE EMPLOYED FOR CONSOLIDATION TO ELIMINATE VOIDS AND HONEYCOMBING.

4. PRECAST CONCRETE COMPONENTS SHALL BE CERTIFIED BY THE SUPPLIER TO HAVE ATTAINED A MINIMUM STRENGTH OF 3,000 psi AT TRANSPORT TIME WITH FINAL CONCRETE STRENGTH TO BE AT LEAST 3,500 psi WITHIN 28 DAYS. VERIFICATION OF CONCRETE STRENGTH SHALL BE PROVIDED BY THE SUPPLIER UPON REQUEST AND SHALL BE CONFIRMED THROUGH CYLINDER BREAKS FROM NORMAL PRODUCTION PROCEDURES AND IN-HOUSE QUALITY CONTROL. A SET OF FOUR (4) CYLINDERS SHALL BE TAKEN AT RANDOM IN THE PLANT NOT LESS THAN ONCE DURING EACH WEEK OF PRODUCTION.

5. CONCRETE REINFORCING STEEL SHALL BE ASTM A-615 BILLET BARS, GRADE 40. BARS SHALL BE LAPPED AT LEAST THIRTY (30) BAR DIAMETERS AT SPLICES AND CORNER BARS SHALL BE PROVIDED TO MATCH HORIZONTAL REINFORCING.

6. STRUCTURAL STEEL, EMBEDMENT STEEL, AND CONNECTIONS SHALL CONFORM TO ASTM A-36. ALL EXPOSED STEEL PLATES AND CONNECTIONS SHALL BE PAINTED WITH ONE FIELD COAT OF COMPATIBLE PRIMER AND ONE COAT OF EPOXY PAINT.

7. FIELD WELDING SHALL BE PERFORMED USING E70XX ELECTRODES AND SHALL CONFORM TO STANDARDS OF THE AMERICAN WELDING SOCIETY FOR WELDING IN BUILDING CONSTRUCTION.

8. ALL DOOR FRAMES, FAN AND VENT ASSEMBLIES AND SLAB PENETRATION SHALL BE CAST INTO THEIR RESPECTIVE SLABS.

9. CONTRACTOR RESPONSIBLE TO DETERMINE SPACE REQUIREMENTS FOR PLUMBING TRAIN, VENTS AND ELECTRICAL CONDUITS, AND SUBMIT SHOP DRAWINGS OF BUILDING, INCLUDING LOCATIONS AND SIZES OF FLOOR, EXTERIOR WALL AND INTERIOR WALL PENETRATIONS, FOR ENGINEER'S APPROVAL PRIOR TO FABRICATING PRE-CAST CONCRETE BUILDING. ADEQUATE WALL CLEARANCE SHALL BE PROVIDED FOR O&M OF ALL FLANGES, VALVES AND OTHER APPURTENANCES.

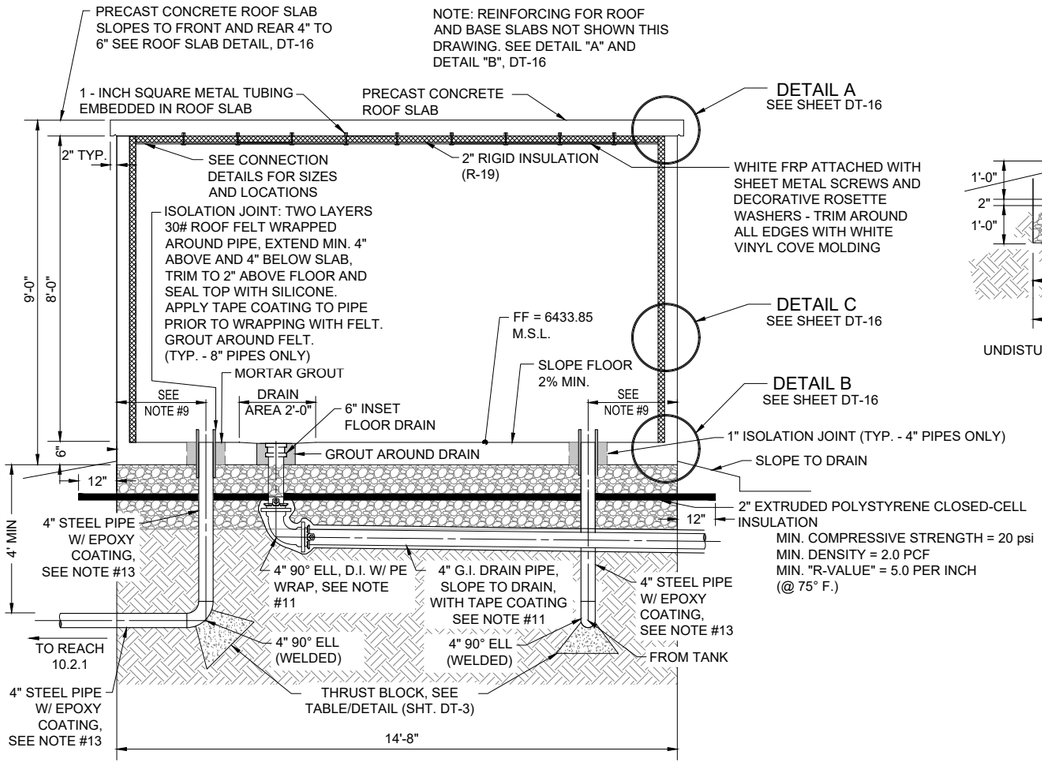
10. ALL BURIED DRAIN LINE PIPES WITHIN 5 FEET OF BUILDING SHALL BE DUCTILE IRON, 350 psi, SOLID PIPE PIECES ONLY. NO DUCTILE IRON PIPE JOINTS ALLOWED.

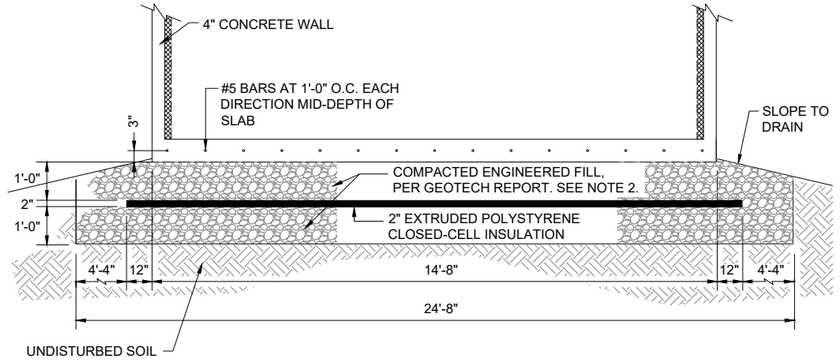
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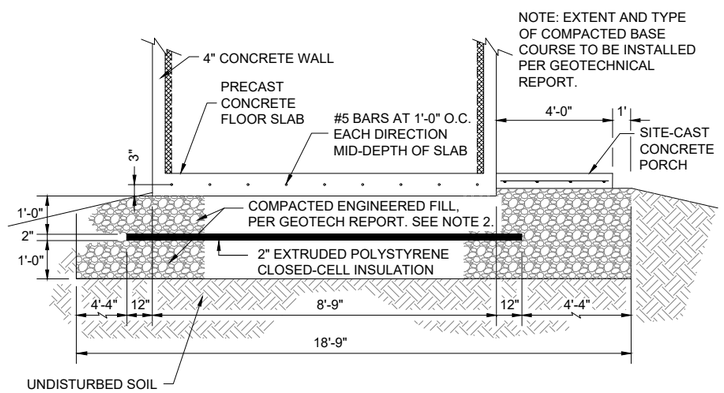
12. ALL PRESSURIZED BURIED PIPE UNDERNEATH OR WITHIN 5 FEET OF BUILDING SHALL BE STANDARD WALL STEEL WITH SHOP WELDED FITTINGS

13. ALL 4" BURIED METALLIC PRESSURIZED PIPE AND WELDED FITTINGS SHALL BE COLD APPLIED TAPE COATED PER SPECIFICATIONS, AND COATED WITH FUSION BONDED EPOXY, INTERIOR AND EXTERIOR.

14. CONTRACTOR RESPONSIBLE FOR LOCATING AND DETERMINING ELECTRICAL CONDUIT PENETRATIONS.







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Revision | Date | Description | By | Chkd

Client: The Navajo Nation
Location: Standing Rock, NM

PRECAST BOOSTER STATION (1 OF 2)
NAVAJO GALLUP WATER SUPPLY PROJECT
BEACON BISTI N9 - REACH 10.2.1
McKINLEY COUNTY, NEW MEXICO

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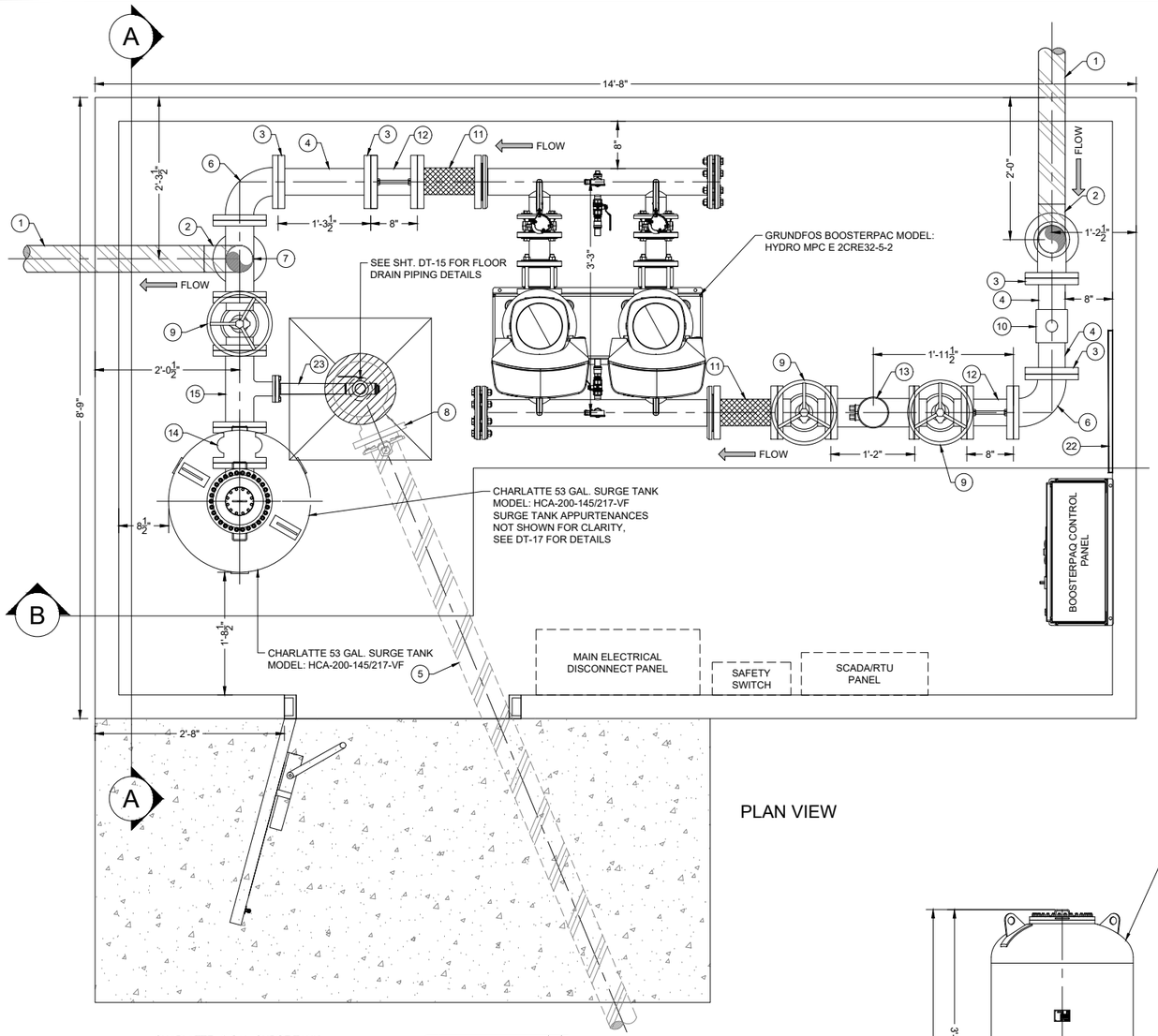
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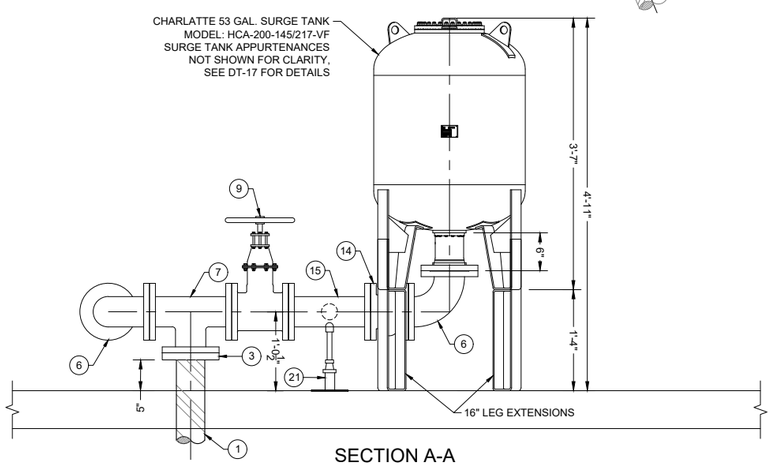
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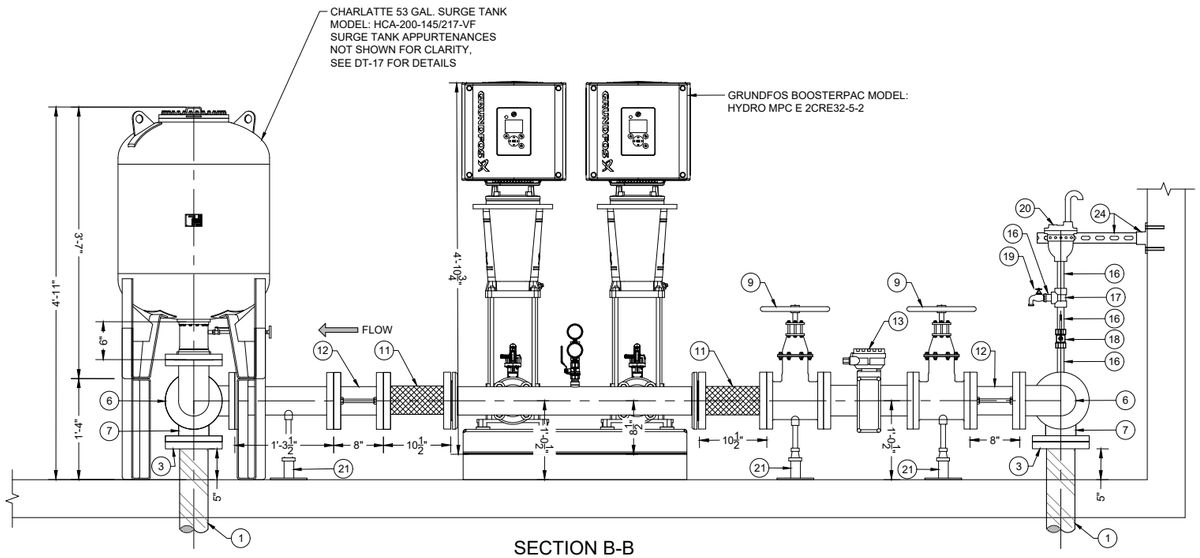
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PLAN VIEW



SECTION A-A



SECTION B-B

BOOSTER PUMP BUILDING PIPING PLAN

SCALE: 1" = 2'

KEYED NOTES - STANDING ROCK TANK #1 BOOSTER PUMP BUILDING	
Item No.	Description
1	4" STEEL PIPE, STANDARD WALL, WITH POLYMIDE EPOXY PER SPECIFICATIONS
2	4" 90° BEND, WELDED STEEL
3	4" EZ FLANGE
4	4" THREADED DUCTILE IRON PIPE, NPT
5	4" DUCTILE IRON PIPE, PE x PE
6	4" FL x FL 90° BEND, D.I.
7	4" FL x FL x FL TEE, D.I.
8	4" MJ x MJ 90° BEND, D.I.
9	4" FL x FL GATE VALVE WITH HAND WHEEL
10	4" x 3/4" TAPPING SADDLE, DUAL STRAP, SS 304
11	4" FL x FL FLEX CONNECTOR
12	4" FL x FL DISMANTLING JOINT
13	4" FLANGED ELECTRONIC FLOW METER, ELSTER EVOQ4, MAINTAIN STRAIGHT PIPE >20" IN FRONT AND >12" BEHIND CENTER OF METER. INCLUDE ADDITIONAL SAME SIZE/LENGTH SPOOL FOR REPAIRS.
14	4"Ø x 6" PROCO MODEL 231 EXPANSION JOINT
15	4" x 2" REDUCING TEE FL, D.I.
16	3/4" NIPPLE, NPT, SS 304
17	3/4" TEE, NPT, SS 304
18	3/4" BALL VALVE, SS 304, NPT
19	3/4" HOSE BIB, MIPT, BRASS
20	3/4" COMBINATION AIR RELEASE VALVE
21	ADJUSTABLE PIPE SUPPORT W/ U-SHAPED CRADLE
22	INTERIOR SIGN SEE DETAIL "B" SHT. DT-17
23	DRAIN ASSEMBLY, SEE DETAIL "A" SHT. DT-17
24	1-5/8" UNI-STRUT AND POST BRACKET

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Revision | Date | Description | By | Chkd

Client: The Navajo Nation
Location: Standing Rock, NM

PRECAST BOOSTER STATION (2 OF 2)
NAVAJO GALLUP WATER SUPPLY PROJECT
BEACON BISTI N9 - REACH 10.2.1
McKINLEY COUNTY, NEW MEXICO

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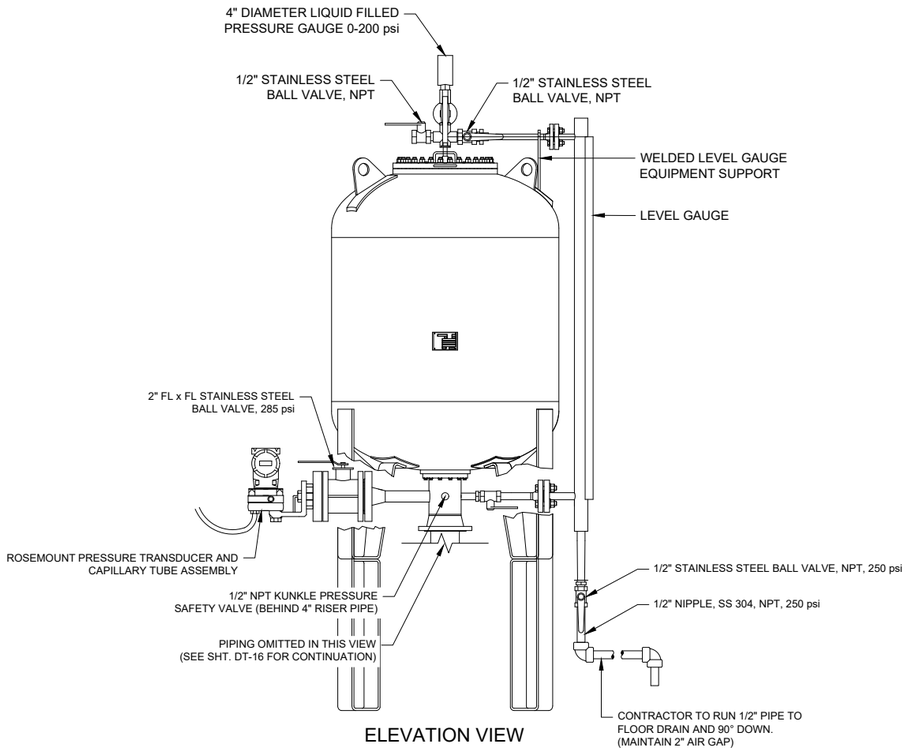
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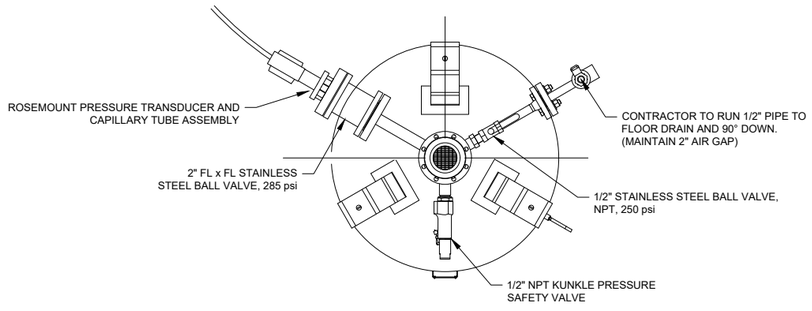
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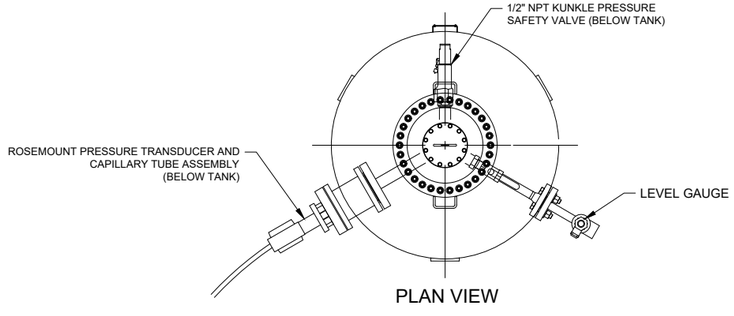
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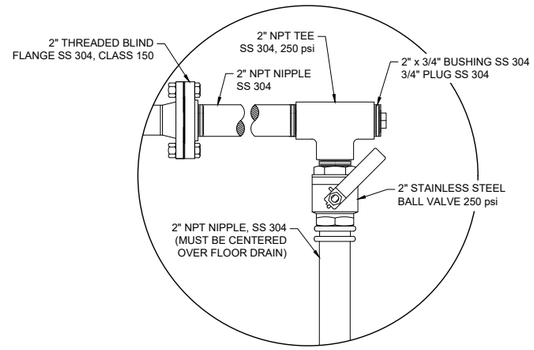


UNDERSIDE VIEW



PLAN VIEW

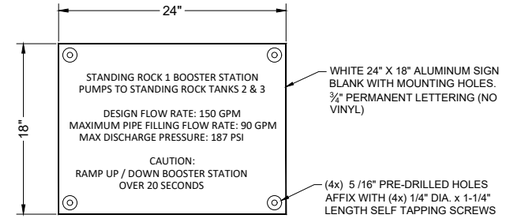
53 GAL. SURGE TANK DETAILS "C"



DRAIN ASSEMBLY DETAIL "A"

N.T.S.

NOTE:
ALL DIMENSIONS RELATED TO TANK SIZES, LEG SPACING, ETC. ARE APPROXIMATE, CONTRACTOR TO FIELD VERIFY ACTUAL TANK DIMENSIONS BEFORE FOUNDATION CONSTRUCTION OR DRAIN PIPE INSTALLATION. PROVIDE MEASUREMENTS TO ENGINEER AS SUBMITTAL.



STANDING ROCK TANK SITE #1
BOOSTER STATION INTERIOR SIGNAGE
DETAIL "B"

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Revision	Date	Description	By	Chkd

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SURGE TANK DETAILS
NAVAJO GALLUP WATER SUPPLY PROJECT
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McKINLEY COUNTY, NEW MEXICO

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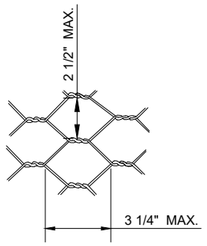
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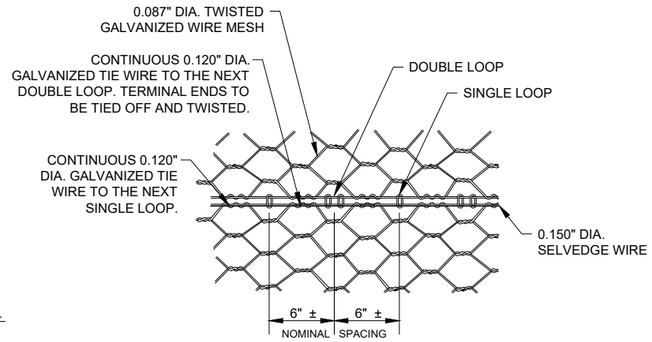
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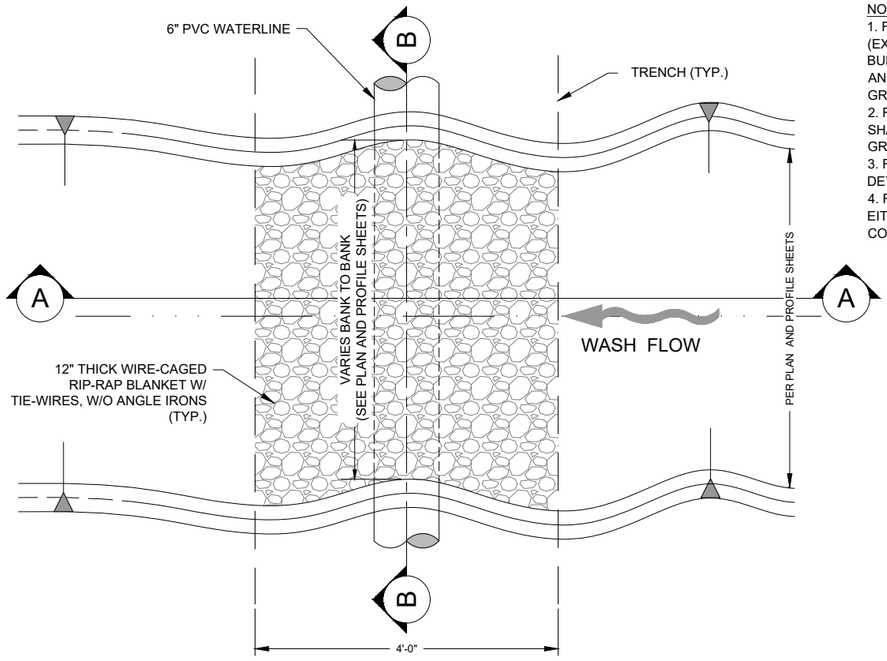
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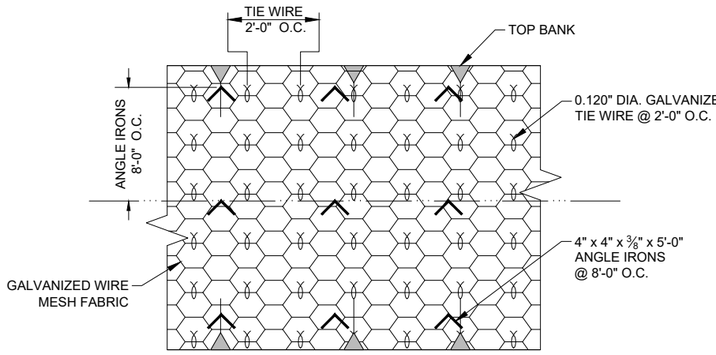


STANDARD JOINT CONNECTION DETAIL
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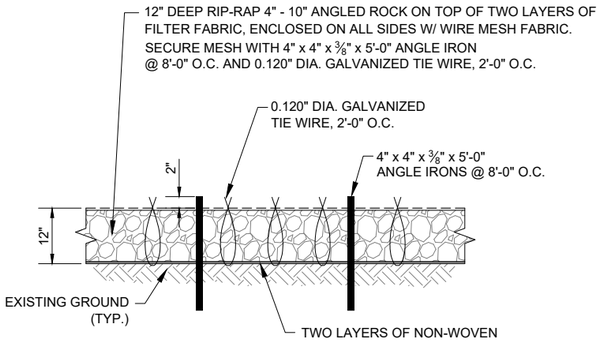


PLAN VIEW

NOTE:
1. FOR RIP-RAP BLANKETS IN NATURAL WATERWAYS (EXCEPT FLUSH VALVE OUTLETS), BLANKET SHALL BE BURIED AS SHOWN. COVER BLANKET WITH NATURAL SOIL AND REGRADE TO RESTORE WASH FLOWLINE TO NATURAL GRADE.
2. RIP-RAP BLANKETS AT SITES AND FLUSH VALVE OUTLETS SHALL BE INSTALLED FLUSH WITH SURROUNDING FINISHED GRADE.
3. FINAL QUANTITIES, DIMENSIONS AND LOCATIONS TO BE DETERMINED IN FIELD BY ENGINEER.
4. FOR ALL WASH CROSSINGS AND FLUSH VALVE OUTLETS, EITHER RIP-RAP OR CABLE CONCRETE MAY BE USED AT CONTRACTOR'S OPTION

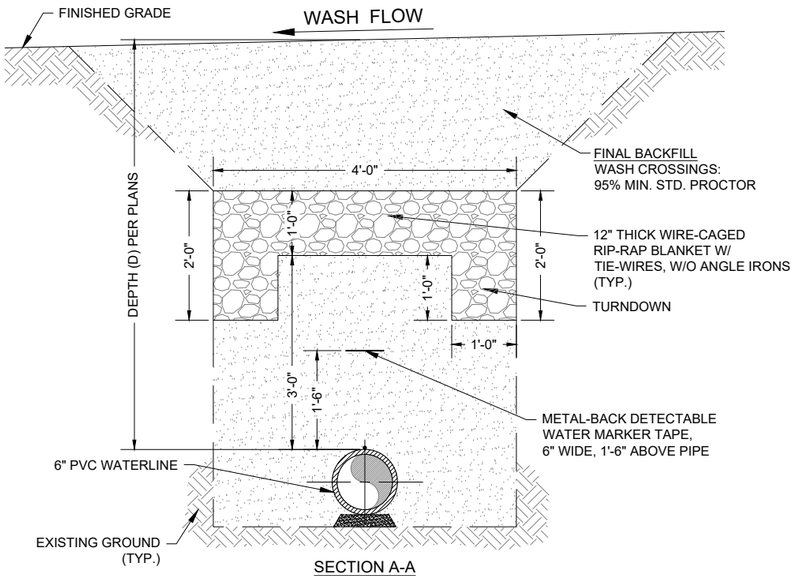


TYP. 12" RIP-RAP CAGE & ANCHORING
NOT TO SCALE

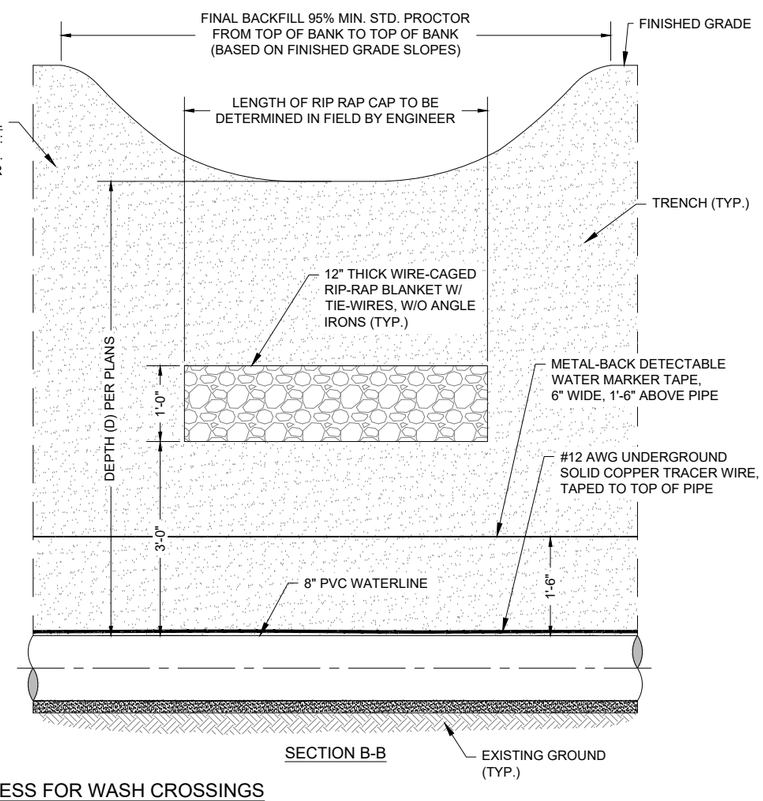


CROSS SECTION

TYPICAL 12" RIP-RAP DETAIL
NOT TO SCALE



SECTION A-A



SECTION B-B

TYPICAL BURIED 12" RIP-RAP MATTRESS FOR WASH CROSSINGS
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www.soudermiller.com

Location: Standing Rock, NM
Client: The Navajo Nation

EROSION CONTROL DETAILS (1 OF 3)
NAVAJO GALLUP WATER SUPPLY PROJECT
BEACON BISTI N9 - REACH 10.2.1
McKINLEY COUNTY, NEW MEXICO

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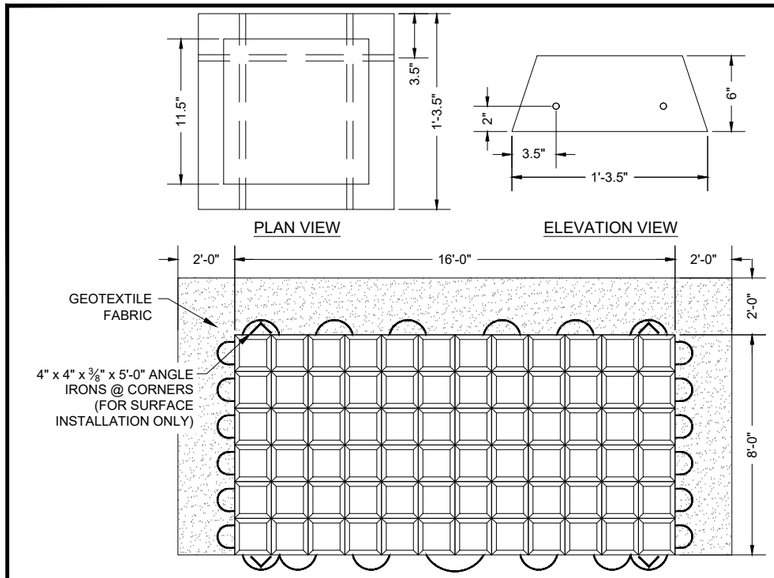
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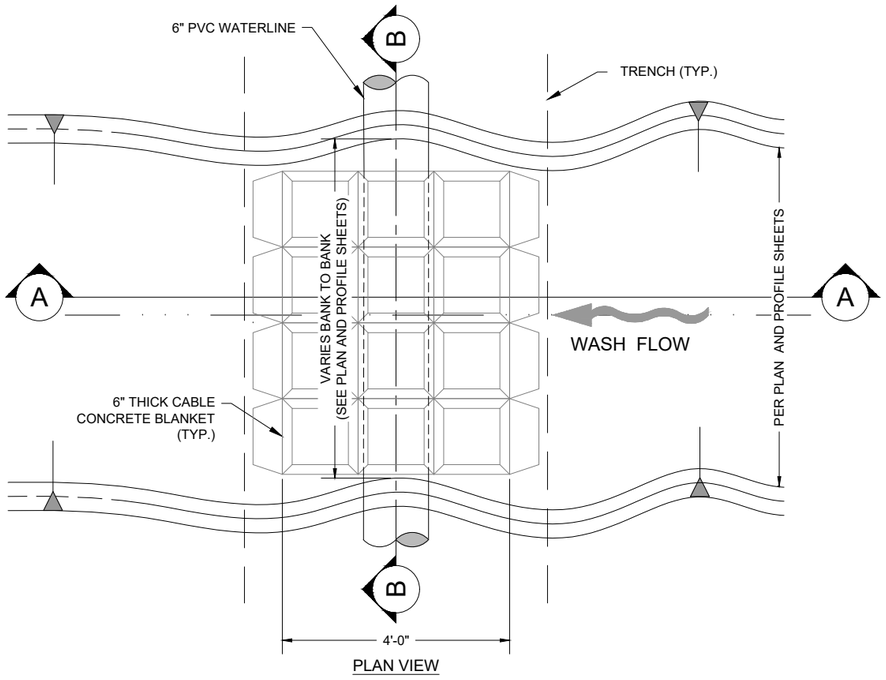
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Project No: 6922268
Sheet: DT-18

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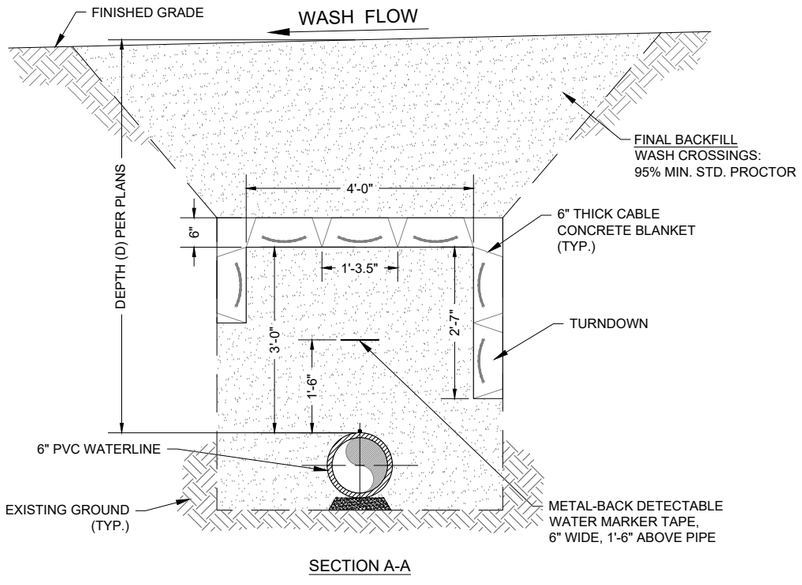
TYPICAL 6" CC-45 CLOSED CELL CABLE CONCRETE DETAIL

NOT TO SCALE

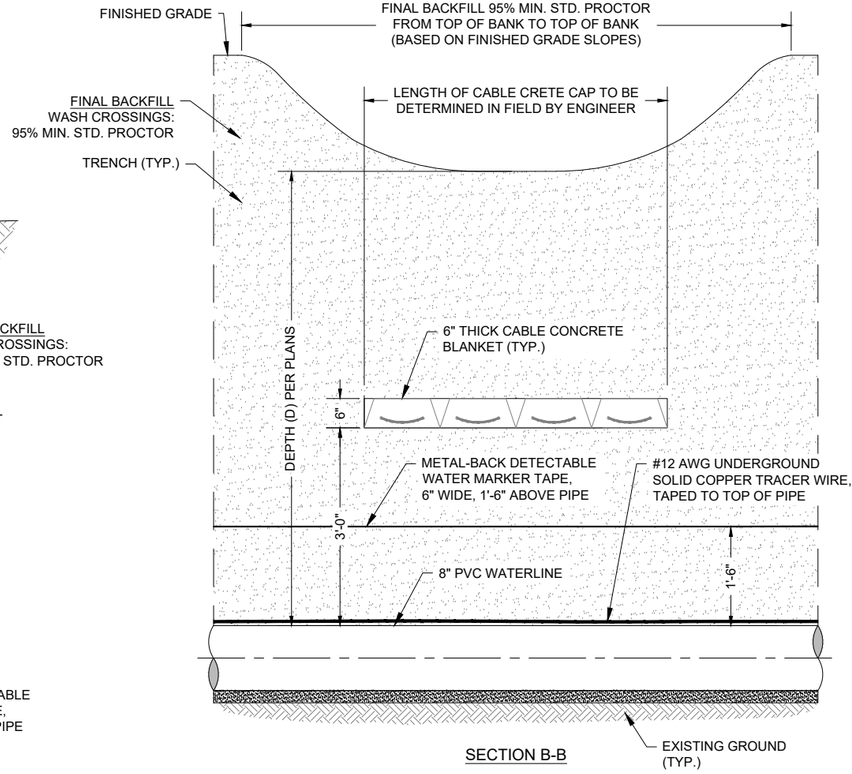


PLAN VIEW

NOTE:
1. FOR CABLE CONCRETE BLANKETS IN NATURAL WATERWAYS (EXCEPT FLUSH VALVE OUTLETS), BLANKET SHALL BE BURIED AS SHOWN. COVER BLANKET WITH NATURAL SOIL AND REGRADE TO RESTORE WASH FLOWLINE TO NATURAL GRADE.
2. CABLE CONCRETE BLANKETS AT SITES AND FLUSH VALVE OUTLETS SHALL BE INSTALLED FLUSH WITH SURROUNDING FINISHED GRADE.
3. FINAL QUANTITIES, DIMENSIONS AND LOCATIONS TO BE DETERMINED IN FIELD BY ENGINEER.
4. FOR ALL WASH CROSSINGS AND FLUSH VALVE OUTLETS, EITHER RIP-RAP OR CABLE CONCRETE MAY BE USED AT CONTRACTOR'S OPTION.



SECTION A-A



SECTION B-B

TYPICAL BURIED 6" CABLE CONCRETE MATTRESS FOR WASH CROSSINGS

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EROSION CONTROL DETAILS (2 OF 3)
NAVAJO GALLUP WATER SUPPLY PROJECT
BEACON BISTI N9 - REACH 10.2.1
McKINLEY COUNTY, NEW MEXICO

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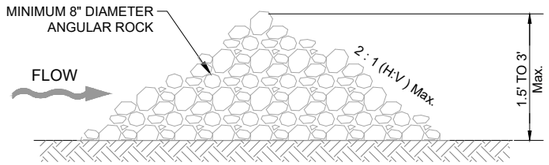
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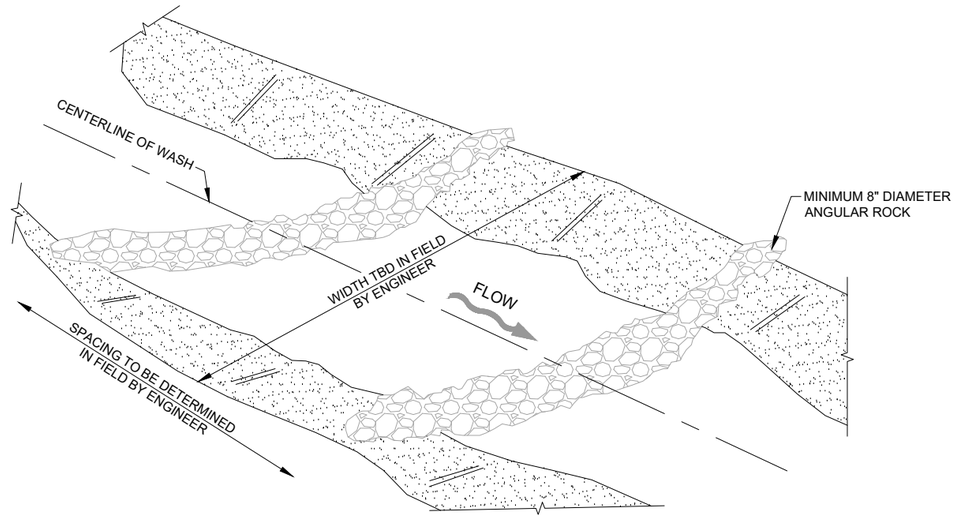
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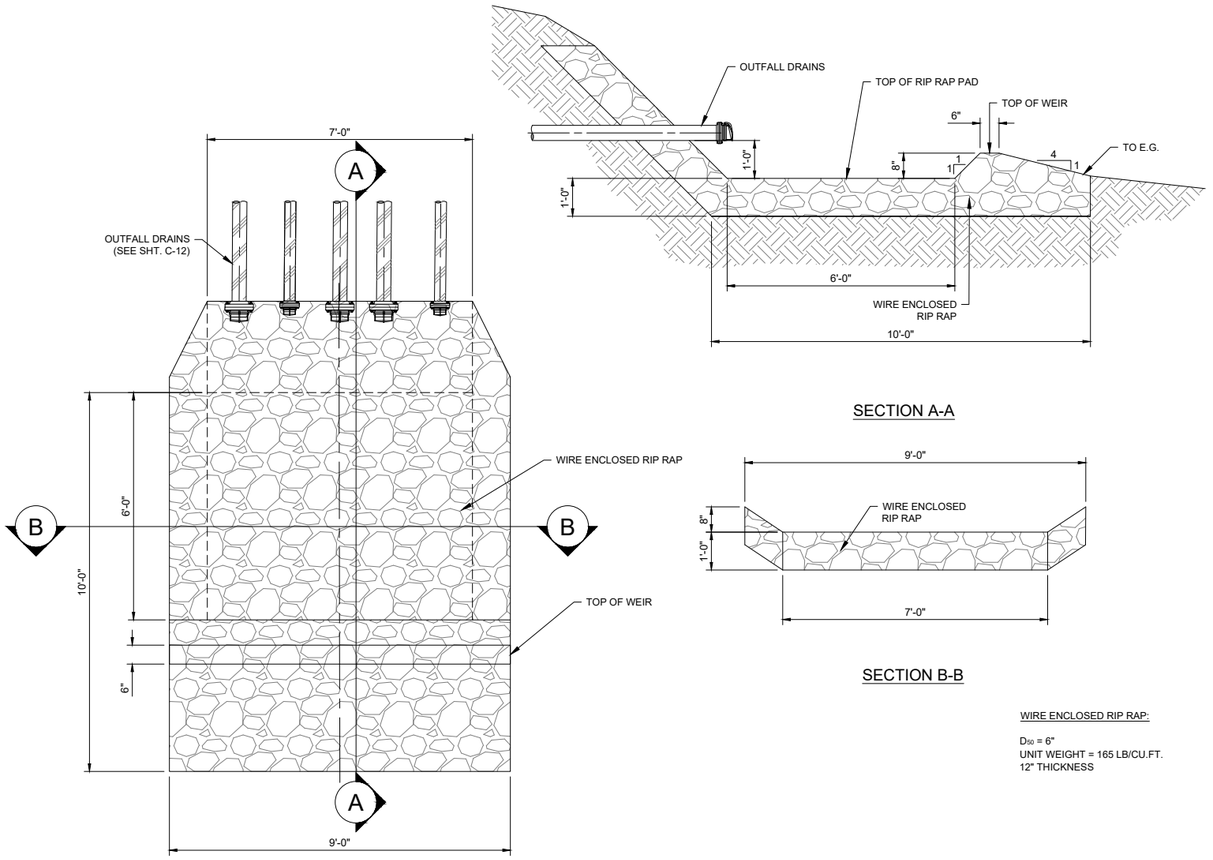
TYPICAL ROCK DAM SECTION



ISOMETRIC VIEW

ROCK CHECK DAM DETAIL

NOT TO SCALE



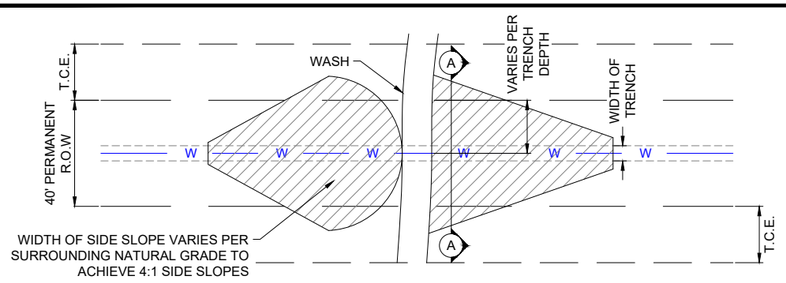
PLAN VIEW

SECTION A-A

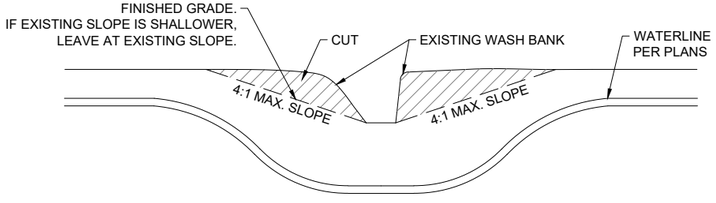
SECTION B-B

WIRE ENCLOSED RIP RAP:

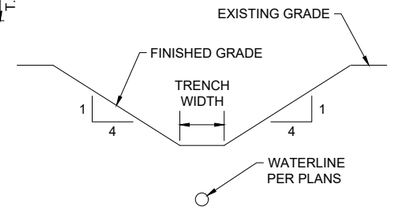
D_{50} = 6"
UNIT WEIGHT = 165 LB/CU.FT.
12" THICKNESS



PLAN VIEW



PROFILE VIEW



SECTION A-A

WASH CROSSING GRADING DETAIL

NOT TO SCALE

NOTE:
1. ALL GRADING MUST REMAIN WITHIN TEMPORARY CONSTRUCTION EASEMENT.

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EROSION CONTROL DETAILS (3 OF 3)
NAVAJO GALLUP WATER SUPPLY PROJECT
BEACON BISTI N9 - REACH 10.2.1
McKINLEY COUNTY, NEW MEXICO

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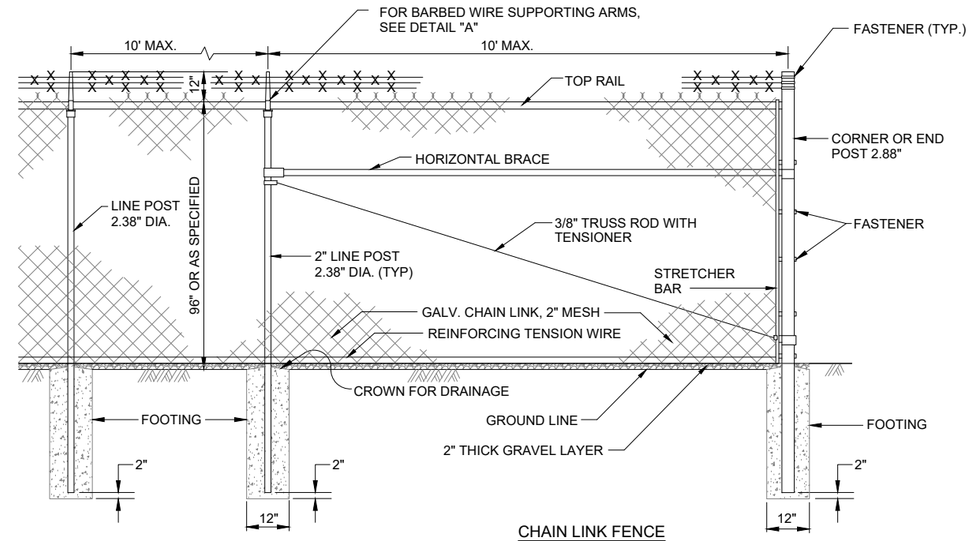
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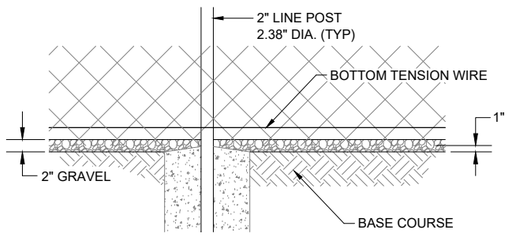


CHAIN LINK FENCE

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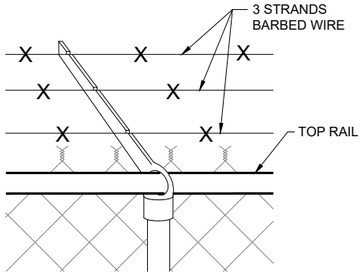
NOTES:

1. AT BROW CROSSING, EMBED ON 6" CENTERS, 4-11/2" x 24" GALVANIZED RODS WITH 2" HOOKED END INTO BROW DITCH CONCRETE. EXPOSED END OF ROD SHALL BE WOVEN INTO FENCE FABRIC.
2. IMBED BOTTOM OF FABRIC MIN. 1" INTO THE 2" THICK GRAVEL LAYER.



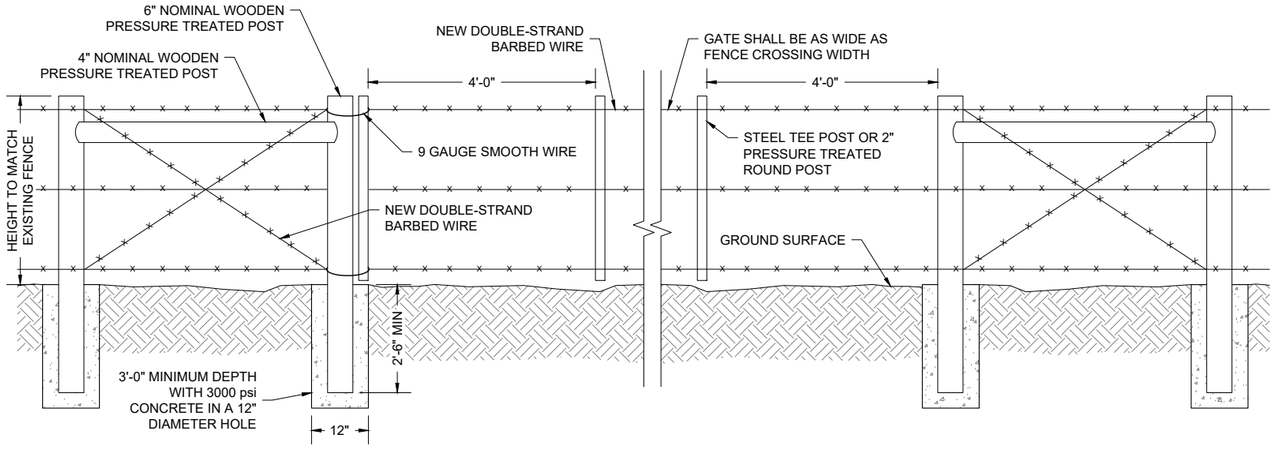
BASE COURSE AND GRAVEL DETAIL

NOT TO SCALE



DETAIL "A" SUPPORTING ARM & BARBED WIRE

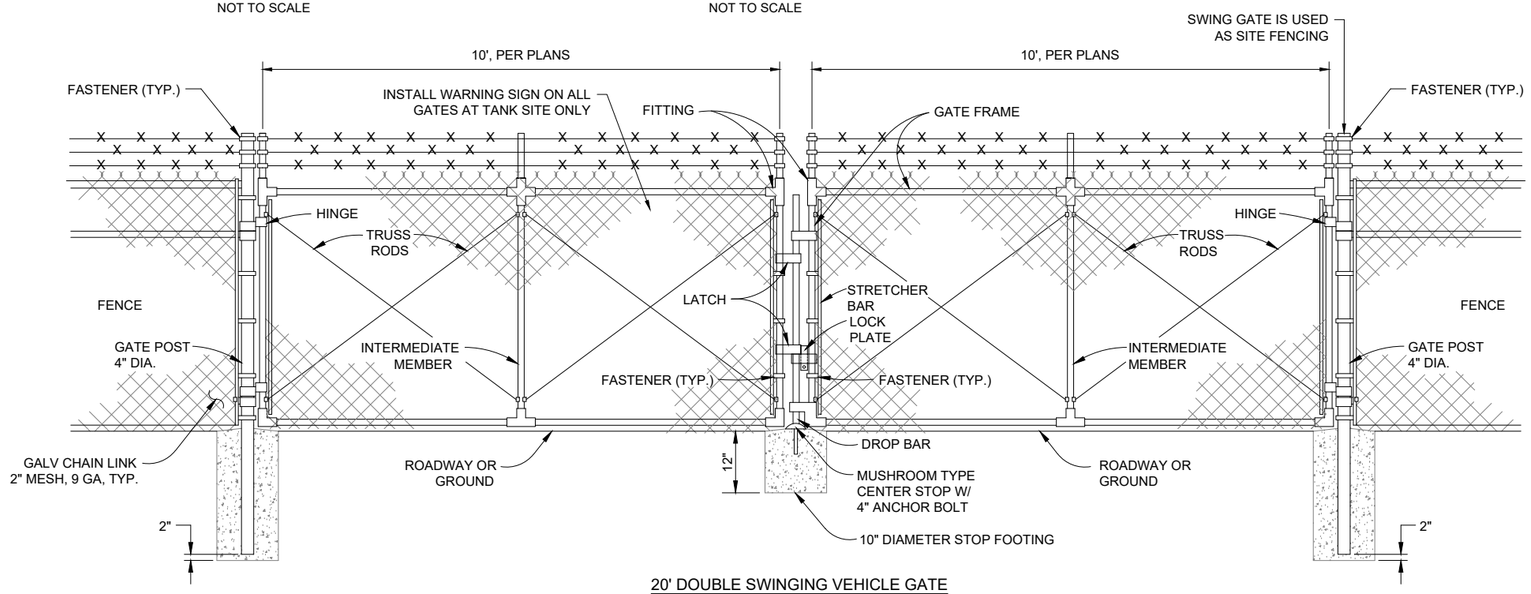
NOT TO SCALE



"RANCHER STYLE" GATE WITH H-BRACE

PULL ASSEMBLY AT EXISTING WIRE FENCE CROSSING

NOT TO SCALE



20' DOUBLE SWINGING VEHICLE GATE

NOT TO SCALE

GATE POST

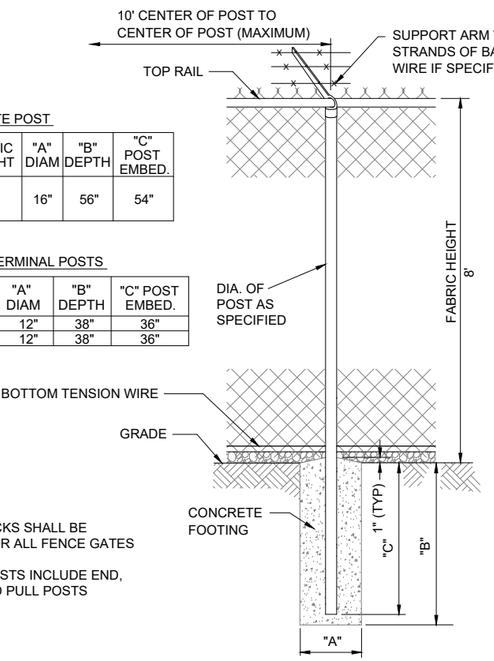
GATE LEAF WIDTH	GATE POST (OD)	FABRIC HEIGHT	"A" DIAM	"B" DEPTH	"C" POST EMBED.
10'	4"	8'	16"	56"	54"

LINE AND TERMINAL POSTS

FABRIC HEIGHT	TYPE POST	"A" DIAM	"B" DEPTH	"C" POST EMBED.
8'-0"	LINE	12"	38"	36"
	TERMINAL	12"	38"	36"

NOTES:

1. COMMON LOCKS SHALL BE PROVIDED FOR ALL FENCE GATES
2. TERMINAL POSTS INCLUDE END, CORNER, AND PULL POSTS



CHAIN LINK FENCE FOUNDATION

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Location: Standing Rock, NM

FENCE DETAILS

NAVAJO GALLUP WATER SUPPLY PROJECT
BEACON BISTI N9 - REACH 10.2.1
McKINLEY COUNTY, NEW MEXICO

90% REVIEW DRAFT

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ELECTRICAL SYMBOL LEGEND

SYMBOL	DESCRIPTION
	WALL OUTLET AND SURFACE MOUNTED FIXTURE
	LED OUTLET AND FIXTURE
	SINGLE POLE SWITCH, FLUSH MOUNTED 48" A.F.F.
	DUPLEX CONVENIENCE OUTLET, 18" A.F.F.
WP	WEATHERPROOF DUPLEX CONVENIENCE OUTLET, 18" A.F.F.
GFCI	DUPLEX CONVENIENCE OUTLET, GROUND FAULT CIRCUIT INTERRUPTER, 18" A.F.F.
J	JUNCTION BOX INSTALLED ABOVE LAY-IN CEILING WITH FLEXIBLE CONDUIT CONNECTION TO LAY-IN FIXTURES. MAXIMUM 4'-0" LENGTH OF CONDUIT, WITH REQUIRED CONDUCTORS ALONG WITH GREEN GROUND CONDUCTOR
J	JUNCTION BOX FLUSH IN WALL, HEIGHT AS INDICATED ON DRAWINGS, WITH CONNECTION TO EQUIPMENT
	CONCEALED BRANCH CIRCUIT WITH CONDUCTORS AS INDICATED. NEUTRAL, HOT, SWITCH LEG AND GROUND RESPECTIVELY
	BRANCH CIRCUIT OR CONDUIT INSTALLED UNDERGROUND OR UNDER FLOOR
P2-2,4	HOMERUN TO PANELBOARD WITH BRANCH CIRCUIT NUMBERS INDICATED
SV	SOLENOID VALVE
LS	LIMIT SWITCH
PT	PRESSURE TRANSMITTER
	FIRE ALARM SMOKE AND HEAT DETECTOR, PHOTOELECTRIC TYPE, 120V AUX CONTACTS
F	MOTOR CONNECTION FOR FRACTIONAL HP MOTOR (1/3 HP OR LESS). PROVIDE THERMAL OVERLOAD SWITCH (WEATHERPROOF IF OUTSIDE) ADJACENT TO MOTOR UNLESS SWITCH IS SHOWN ELSEWHERE ON PLANS
M	MOTOR CONNECTION FOR MOTOR WITH HP INDICATED
	DISCONNECT SWITCH, POLES AND RATING AS INDICATED OR AS REQUIRED, NEMA 3R IF INSTALLED OUTSIDE
F	FUSED DISCONNECT SWITCH, FUSE, POLES AND RATING AS INDICATED OR AS REQUIRED, NEMA 3R IF INSTALLED OUTSIDE
	COMBINATION MAGNETIC MOTOR CONTROLLER/DISCONNECT SWITCH. SIZE, POLES, FUSES AND OVERLOADS PER MOTOR SERVED
	MAGNETIC MOTOR CONTROLLER, SIZE AND POLES PER MOTOR SERVED
T	TRANSFORMER, DRY TYPE, SIZE AS INDICATED
T	THERMOSTAT(M), 48" A.F.F.
	120V PANELBOARD, REFER TO PANEL SCHEDULE
	277V PANELBOARD, REFER TO PANEL SCHEDULE
	SPECIAL PURPOSE CABINET, AS INDICATED ON DRAWINGS
DC	INTRUSION ALARM DOOR CONTACT MAGNETIC
	NORMALLY OPEN CONTACT
	NORMALLY CLOSED CONTACT
C	CONTACTOR
OLS	MOTOR OVERLOADS
	RED PILOT LIGHT
	GREEN PILOT LIGHT
	TRANSFORMER
R	RELAY
	SWITCH
	FUSE(S)
	CIRCUIT BREAKER
PLC	PROGRAMMABLE LOGIC CONTROLLER
RTU	REMOTE TERMINAL UNIT
T	THERMOSTAT
WP	WEATHERPROOF (NEMA 3R)
NIC	NOT IN CONTRACT
NTS	NOT TO SCALE
A.F.F.	ABOVE FINISHED FLOOR
A.F.G.	ABOVE FINISHED GRADE

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

GENERAL NOTES

SPECIFICATIONS

G1) IF THERE IS A CONFLICT BETWEEN PLANS/SPECIFICATIONS AND MANUFACTURER'S RECOMMENDATIONS FOR ANY DEVICE, PART, OR MATERIAL USED IN THE PROJECT, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY IN WRITING THE ENGINEER FOR CLARIFICATION.

G2) THE CONTRACTOR SHALL FAMILIARIZE HIM/HERSELF WITH THE PLANS, AND THE SITE CONDITIONS PRIOR TO BID OPENING AND SHALL IMMEDIATELY NOTIFY THE ENGINEER IN WRITING OF ANY AMBIGUITIES, CONTRADICTIONS OR IRREGULARITIES IN THE PLANS.

G3) IF, DURING BIDDING OR CONSTRUCTION, THE CONTRACTOR IS IN DOUBT AS TO THE TRUE MEANING OF ANY PART OF THE PLANS, SPECIFICATIONS, OR OTHER CONTRACT DOCUMENTS, OR DISCREPANCIES IN OR POSSIBLE OMISSIONS FROM THE DRAWINGS OR SPECIFICATIONS, THEY SHALL IMMEDIATELY NOTIFY THE ENGINEER IN WRITING AND REQUEST AN INTERPRETATION OF CORRECTION THEREOF. DURING THE BIDDING PROCESS AN ADDENDUM (IF NEEDED) WILL BE ISSUED.

G3.1) THE CONTRACT, IF AWARDED, WILL BE ON THE BASIS OF MATERIAL AND EQUIPMENT SPECIFIED OR DESCRIBED IN THE BIDDING DOCUMENTS WITHOUT CONSIDERATION OF POSSIBLE SUBSTITUTE OR "OR EQUAL" ITEMS. WHEREVER A BRAND NAME IS SPECIFIED OR DESCRIBED IN THE BIDDING DOCUMENTS A SUBSTITUTE OR "OR EQUAL" ITEM OF MATERIAL OR EQUIPMENT MAY BE FURNISHED OR USED BY CONTRACTOR IF ACCEPTABLE TO ENGINEER, APPLICATION FOR SUCH ACCEPTANCE WILL NOT BE CONSIDERED BY ENGINEER UNTIL AFTER THE EFFECTIVE DATE OF AGREEMENT. THE PROCEDURE FOR SUBMISSION OF ANY SUCH APPLICATION BY CONTRACTOR AND CONSIDERATION BY ENGINEER IS SET FORTH IN THE GENERAL CONDITIONS.

EXISTING UTILITIES & OBSTACLES TO WORK

G4) THE CONTRACTOR IS RESPONSIBLE TO INSTALL ALL ITEMS DESCRIBED IN THESE PLANS IN A MANNER THAT PROTECTS THE EXISTING FACILITY. THE CONTRACTOR MUST CONTACT THE ENGINEER IMMEDIATELY IF HE IS UNABLE TO PERFORM THIS WORK WITHOUT DAMAGE TO THE EXISTING FACILITY. THE CONTRACTOR MUST FIELD VERIFY ALL EXISTING INFORMATION SHOWN ON THESE PLANS. DESIGN ELEMENTS OF THIS PROJECT WILL NOT CHANGE WITHOUT CHANGE ORDER UNLESS THE CONTRACTOR NOTIFIES THE ENGINEER IN A TIMELY MANNER REGARDING ITEMS DESCRIBED IN THIS NOTE. CHANGES IN ALIGNMENT CAUSED BY UNKNOWN OR UNANTICIPATED SITE CONDITIONS SHALL BE ACCOUNTED FOR BY THE APPROPRIATE UNIT PRICES, AS RECOMMENDED BY THE ENGINEER AND APPROVED BY THE OWNER.

G5) THE EXISTENCE, CONDITION AND LOCATION OF ANY UNDERGROUND UTILITIES OR STRUCTURES SHOWN IN THESE PLANS WAS OBTAINED BY A CAREFUL SEARCH OF AVAILABLE RECORDS. TO THE BEST OF THE ENGINEERS KNOWLEDGE, THERE ARE NO EXISTING UNDERGROUND UTILITIES EXCEPT THOSE SHOWN ON THESE PLANS. THE CONTRACTOR IS REQUIRED TO TAKE ALL PRECAUTIONARY MEASURES TO PROTECT THE UTILITIES SHOWN, AND ANY OTHER LINES OR STRUCTURES NOT SHOWN ON THESE PLANS, AND IS RESPONSIBLE FOR THEIR LOCATING, PROTECTION OF, OR ANY DAMAGE TO THESE LINES OR STRUCTURES. THIS DOES NOT RELIEVE THE CONTRACTOR FROM HIS RESPONSIBILITY TO NOTIFY ALL UTILITY COMPANIES AND OBTAIN LINE SPOTS.

G6) THE FOLLOWING IS A LIST OF POSSIBLE OBSTRUCTIONS AND SHALL NOT BE CONSIDERED A COMPLETE LIST OF POSSIBLE OBSTRUCTIONS: EXISTING UTILITIES, STRUCTURE, GEOTECHNICAL FEATURES, ALL CONDUIT, CABLES, PIPES, WATERLINES, SEWER LINES, GAS LINES, POWER LINES, TELEPHONE AND TELEGRAPH LINES, TREES, MONUMENTS, TRAFFIC CONTROL DEVICES AND OTHER STRUCTURES, BOTH BELOW AND ABOVE GROUND.

G7) CONTRACTOR SHALL BE HELD RESPONSIBLE FOR COSTS OF REPAIR OF ANY AND ALL DAMAGE TO ANY UTILITY (WHICH IS PREVIOUSLY KNOWN AND DISCLOSED TO HIM BY THE UTILITY OR SHOWN ON THESE PLANS) AS MAY BE CAUSED BY HIS OPERATIONS.

G8) FIVE (5) WORKING DAYS PRIOR TO ANY EXCAVATION, CONTRACTOR MUST CONTACT NEW MEXICO ONE-CALL SYSTEM, INC. (505) 260-1990, FOR LOCATION OF EXISTING UTILITIES.

G9) CONTRACTOR SHALL GIVE ALL PUBLIC AND PRIVATE UTILITY COMPANIES NOTICE AS SOON AS POSSIBLE, IN NO EVENT LESS THAN FORTY EIGHT (48) HOURS, FOR ANY WORK THAT IS UNDERSTOOD TO INTERFERE WITH THE SERVICE OF ANY EXISTING PUBLIC OR PRIVATE UTILITY. IF SUCH PUBLIC OR PRIVATE UTILITY DOES NOT COOPERATE FOR THE PROTECTION OF ITS SERVICES, CONTRACTOR SHALL NOTIFY ENGINEER.

G10) CONTRACTOR SHALL IMMEDIATELY REPORT ANY DAMAGES TO PUBLIC OR PRIVATE PROPERTY TO THE OWNER OF THE PROPERTY INVOLVED AND TO THE ENGINEER. CONTRACTOR SHALL REPAIR OR RESTORE AT HIS OWN EXPENSE ANY DAMAGE TO PUBLIC OR PRIVATE PROPERTY, FOR WHICH THEY ARE DIRECTLY OR INDIRECTLY RESPONSIBLE, TO A CONDITION EQUAL TO THAT EXISTING BEFORE DAMAGE. CONTRACTOR SHALL PROMPTLY NOTIFY HIS INSURANCE CARRIER OF SUCH DAMAGE. IF CONTRACTOR FAILS TO GIVE SUCH NOTICE TO HIS INSURANCE CARRIER OR REFUSES TO EFFECT SUCH REPAIRS OR RESTORATION UPON RECEIPT OF NOTICE, THE ENGINEER MAY CAUSE SUCH REPAIRS OR RESTORATION AND DEDUCT THE COST THEREOF FROM MONEYS DUE, OR WHICH MAY BECOME DUE, TO THE CONTRACTOR.

G11) CONTRACTOR IS RESPONSIBLE FOR RECORDING EXISTING CONDITIONS IN ACCORDANCE WITH THE SUPPLEMENTARY CONDITIONS OF THE CONTRACT BEFORE CONSTRUCTION BEGINS. THE RECORD OF EXISTING CONDITIONS SHALL BE USED AS THE "EQUAL CONDITION BEFORE DAMAGE" IN THE EVENT OF DAMAGE TO PUBLIC OR PRIVATE PROPERTY. CONTRACTOR FAILURE TO RECORD EXISTING CONDITIONS WILL MAKE THE OWNERS CLAIM OF "EQUAL CONDITION BEFORE DAMAGE" THE STANDARD THE CONTRACTOR SHALL BE RESPONSIBLE FOR MEETING AND THE ENGINEER WILL BE IN THE POSITION OF NOT BEING ABLE TO SUPPORT THE CONTRACTOR IN THE MEDIATION OF ANY DISPUTE.

G12) THE CONTRACTOR IS RESPONSIBLE FOR FIELD VERIFICATION OF LOCATION OF ALL EXISTING UTILITIES..

SITE CONDITIONS

G13) CONTRACTOR SHALL MAINTAIN ACCESS TO ALL FACILITIES ADJACENT TO THE CONSTRUCTION AREA.

G14) THE CONTRACTOR SHALL USE WATERING EQUIPMENT FOR DUST POLLUTION ABATEMENT AS REQUIRED OR AS DIRECTED BY THE ENGINEER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING AND SUPPLYING WATER. THIS WORK AND MATERIAL SHALL BE CONSIDERED INCIDENTAL TO CONSTRUCTION.

G15) EPA STORM WATER DISCHARGE REGULATIONS. THE CONTRACTOR IS RESPONSIBLE FOR COMPLIANCE TO APPLICABLE PORTIONS OF THE EPA STORM WATER DISCHARGE REGULATIONS.

SITE DESIGN

G16) SUBGRADE. ALL SUBGRADE AND TRENCH BACKFILL SHALL BE COMPACTED TO 95 % OF STANDARD PROCTOR. ALL SUBGRADE AND BACKFILL SHALL BE COMPACTED IN MAXIMUM 8" LOOSE LIFTS. MOISTURE CONTENT AT THE TIME OF COMPACTION SHALL NOT EXCEED OPTIMUM OR BE LESS THAN 5 PERCENTAGE POINTS BELOW OPTIMUM. DRIVEWAYS, APRONS, FILLETS, CURB AND GUTTER, AND OTHER CONCRETE PAVEMENT SHALL BE PLACED ON 6" OF COMPACTED SUBGRADE.

G17) RESTORE SURFACE AT TRENCH TO EXISTING CONDITIONS.

COMMUNICATION

G18) CONTRACTOR SHALL KEEP THE OWNER AND THE ENGINEER UPDATED WEEKLY ON THE CONSTRUCTION SCHEDULE AND/OR PHASE SCHEDULE, AND PROGRESS TO DATE.

STAGING STORAGE & DEBRIS DISPOSAL

G19) DEBRIS GENERATED BY CONSTRUCTION ACTIVITIES SHALL BE DISPOSED OF AT A PERMITTED LANDFILL OR OTHER DULY CERTIFIED REFUSE FACILITY. THE DISPOSAL OF DEBRIS IS NOT A PAY ITEM.

RECORD DRAWINGS

G20) THE CONTRACTOR SHALL PROVIDE A RECORD SKETCH ON THESE PLANS FOR THE AS-CONSTRUCTED CONDITIONS.

PHASE AND SCHEDULE

G21) CONTRACTOR SHALL PHASE AND SCHEDULE WORK IN SUCH A WAY AS TO PROVIDE MINIMAL POWER OUTAGES AT THE FACILITY. A PROJECT SCHEDULE SHALL BE SUBMITTED TO THE OWNER FOR REVIEW PRIOR TO ISSUANCE OF NOTICE-TO-PROCEED. CHANGES IN SCHEDULE SHALL BE PRESENTED TO OWNER AND ENGINEER AT LEAST 7 DAYS PRIOR TO PROPOSED IMPLEMENTATION. THESE SCHEDULES, SCHEMATICS AND DIAGRAMS SHALL BE UPDATED WEEKLY AS THE WORK PROGRESSES. MOST CHANGE OVER SHALL BE DONE ON WEEKENDS OR AFTER HOURS.

SUBMITTALS

G22) CONTRACTOR SHALL PROVIDE SUBMITTALS FOR ALL EQUIPMENT, MATERIALS, PROCESSES AND SCHEDULES AND AS REQUESTED BY ENGINEER.

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Client: The Navajo Nation
Location: Standing Rock, NM

ELECTRICAL LEGEND AND PROJECT NOTES
NAVAJO GALLUP WATER SUPPLY PROJECT
BEACON BISTI N9 - REACH 10.2
McKINLEY COUNTY, NEW MEXICO
SECTION 1, T. 18 N., R. 16 W.

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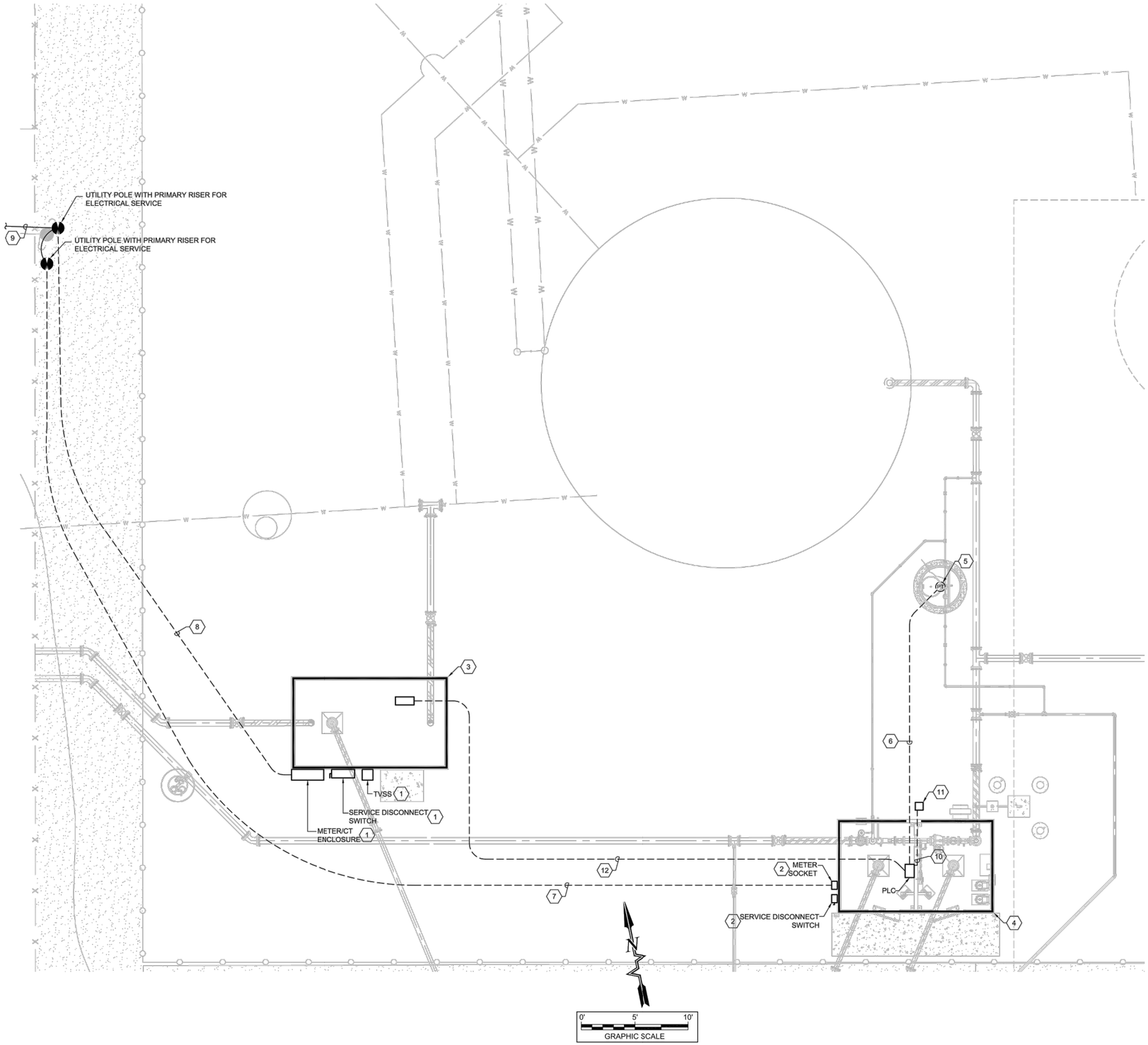
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ELECTRICAL SITE PLAN

GENERAL NOTES

A. ALL CONDUITS SHOWN DASHED SHALL BE BURIED A MINIMUM OF 36" BELOW FINISHED GRADE. ALL CONDUITS THAT COME IN CONTACT WITH THE GROUND SHALL BE PVC OR DOUBLE LAPPED WRAPPED WITH SCOTCHWRAP-51.

B. REFER TO SHEET E-01 FOR "ELECTRICAL SYMBOL LEGEND" AND "GENERAL NOTES".

C. REFER TO SHEET E-51 FOR "POWER RISER DIAGRAM - SURGE TANK" AND SHEET E-52 FOR "POWER RISER DIAGRAM - PUMPING BUILDING".

D. FIELD COORDINATE ALL EQUIPMENT WITH OWNER PRIOR TO INSTALLATION.

E. ALL UTILITY EQUIPMENT SHALL BE FULLY COORDINATED WITH NTUA PRIOR TO INSTALLATION.

KEYED NOTES ⬡

1. REFER TO "POWER RISER DIAGRAM - PUMPING BUILDING" ON SHEET E-51 FOR SERVICE EQUIPMENT SIZES AND WIRING.
2. REFER TO "POWER RISER DIAGRAM - CHLORINATION BUILDING" ON SHEET E-52 FOR SERVICE EQUIPMENT SIZES AND WIRING.
3. NEW PUMPING BUILDING. REFER TO "LIGHTING PLAN - PUMPING BUILDING" ON SHEET E-11, "POWER AND SPECIAL SYSTEMS PLAN - PUMPING BUILDING" ON SHEET E-11 AND "LIGHTING PROTECTION PLAN - PUMPING BUILDING" ON SHEET E-31 FOR ADDITIONAL INFORMATION.
4. NEW CHLORINATION BUILDING. REFER TO "LIGHTING PLAN - CHLORINATION BUILDING" ON SHEET E-12, "POWER AND SPECIAL SYSTEMS PLAN - CHLORINATION BUILDING" ON SHEET E-12 AND "LIGHTING PROTECTION PLAN - CHLORINATION BUILDING" ON SHEET E-32 FOR ADDITIONAL INFORMATION
5. PROVIDE AND INSTALL NEW PRESSURE TRANSDUCER IN VAULT. PRESSURE TRANSDUCER TO BE 4-20mA, 4 WIRE (ANALOG POSITIVE, ANALOG NEGATIVE, POWER POSITIVE AND POWER NEGATIVE) AND SEND SIGNAL TO SCADA SYSTEM. PRESSURE TRANSDUCER TO CONTROL UPSTREAM PUMPING BUILDING. COORDINATE EXACT LOCATION IN FIELD. PROGRAM PLC AS REQUIRED.
6. 3/4" CONDUIT BURIED 36" BELOW FINISHED GRADE WITH RED WARNING TAPE BURIED 12" ABOVE FINISHED GRADE. CONDUIT TO HAVE 4#14 THWN Cu (ANALOG POSITIVE, ANALOG NEGATIVE, POWER POSITIVE AND POWER NEGATIVE). MAKE ALL REQUIRED CONNECTIONS FOR A COMPLETE AND OPERATIONAL SYSTEM.
7. SECONDARY FEEDER TO PUMPING BUILDING BURIED 36" BELOW FINISHED GRADE (OR AS REQUIRED BY NTUA), WITH RED WARNING TAPE BURIED 12" ABOVE CONDUIT. REFER TO "POWER RISER DIAGRAM - PUMPING BUILDING" ON SHEET E-51 FOR ADDITIONAL INFORMATION.
8. SECONDARY FEEDER TO PUMPING BUILDING BURIED 36" BELOW FINISHED GRADE. CONDUIT SHALL BE BURIED 36" BELOW FINISHED GRADE (OR AS REQUIRED BY NTUA), WITH RED WARNING TAPE BURIED 12" ABOVE CONDUIT. REFER TO "POWER RISER DIAGRAM - CHLORINATION BUILDING" ON SHEET E-52 FOR ADDITIONAL INFORMATION.
9. NEW OVERHEAD UTILITY CONDUCTORS. COORDINATE ALL REQUIREMENTS WITH NTUA.
10. 2" CONDUIT WITH LONG SWEEPING BENDS FOR FIBER OPTIC CABLE. COORDINATE EXACT LOCATION WITH ENDPOINT OF FIBER OPTIC CABLE. EXTEND CONDUIT TO PLC/RTU CABINET AND FLUSH IN GRADE QUAZITE BOX. CONDUIT SHALL BE BURIED A MINIMUM OF 36" BELOW FINISHED GRADE. PROVIDE RED WARNING TAPE 12" ABOVE CONDUIT. MAKE ALL REQUIRED CONNECTIONS FOR A COMPLETE AND OPERATIONAL SYSTEM.
11. PROVIDE AND INSTALL FLUSH IN GRADE TRAFFIC RATED QUAZITE BOX FOR FIBER OPTIC CABLE. COORDINATE EXACT LOCATION WITH ENDPOINT OF FIBER OPTIC CABLE.
12. 3" CONDUIT BURIED A MINIMUM OF 36" BELOW FINISHED GRADE WITH RED WARNING TAPE BURIED 12" ABOVE CONDUIT. PROVIDE AND INSTALL CONTROL WIRING AS REQUIRED FOR PUMP BUILDING.

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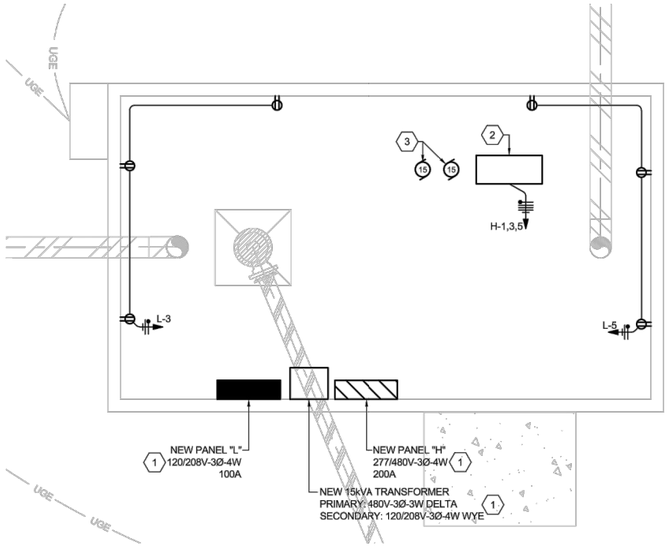
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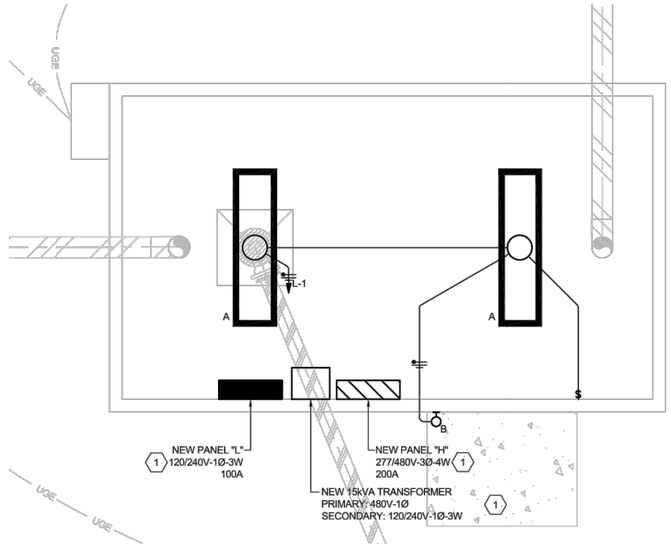
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PUMPING BUILDING - POWER PLAN

SCALE: 1/2" = 1'

0' 2' 4'
GRAPHIC SCALE



PUMPING BUILDING - LIGHTING PLAN

SCALE: 1/2" = 1'

0' 2' 4'
GRAPHIC SCALE

KEYED NOTES

1. REFER TO "POWER RISER DIAGRAM - PUMPING BUILDING" ON SHEET E-51 FOR ADDITIONAL INFORMATION.
2. APPROXIMATE LOCATION OF GRUNDFOS PUMP MANAGEMENT UNIT (PMU). PMU PROVIDED AND INSTALLED WITH BOOSTERPAQ UNIT. ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR INCOMING POWER FEED TO PMU. CONTRACTOR SHALL WIRE WITH 4#4 THWN Cu AND 1#8 THWN Cu GROUND IN 1 1/4" CONDUIT.
3.

GENERAL NOTES

A. ALL RECEPTACLES SHALL BE GFCI PROTECTED, IN A WEATHERPROOF JUNCTION BOX AND MOUNTED AT +48" A.F.F.

LIGHT FIXTURE SCHEDULE

TYPE	FIXTURE DESCRIPTION	LAMPS	MOUNTING
A	INDUSTRIAL VAPOR TIGHT LED FIXTURE, 30W INPUT, UNIVERSAL VOLTAGE INPUT, 4000 LUMEN (NOMINAL) OUTPUT UL LISTED FOR WET LOCATIONS METALUX #4VT2-LD5-4-DR-UNV-L835-CD1-WL-SSL-VT2-CHAIN/SET-U	LED (30W) 4000 LM 3500°K	CHAIN HUNG AT 8'-0" A.F.F.
B	WALL PACK - LED, 32W INPUT, 120 VOLT INPUT, 2200 LUMEN (NOMINAL) OUTPUT, DARK SKY COMPLIANT WITH PHOTOCELL LUMARK #LDWP-FC-4B-120V-PE-WG/WPFC	LED (32W) 4000 LM 4000°K	MOUNT AT 8'-0" TO TOP OF FIXTURE

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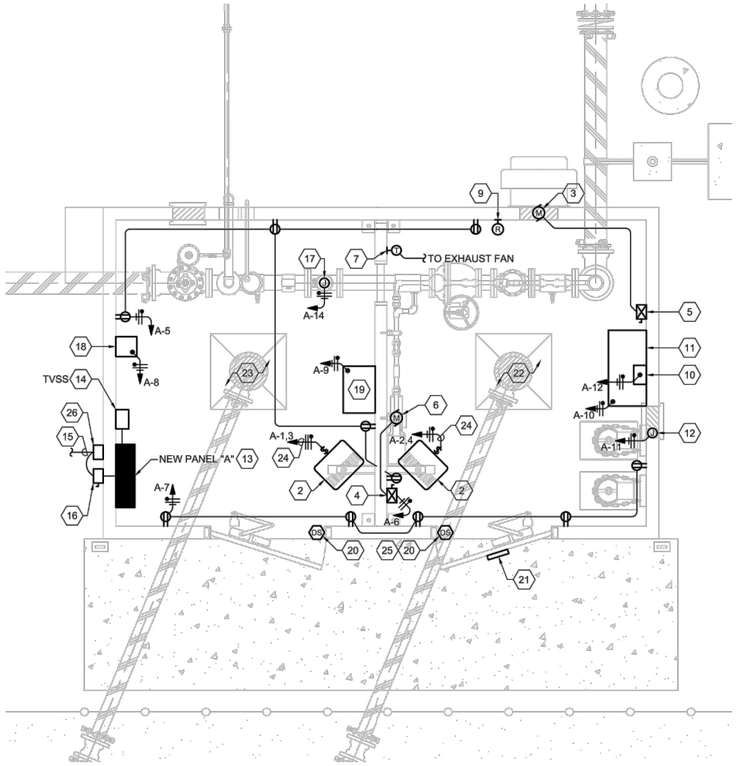
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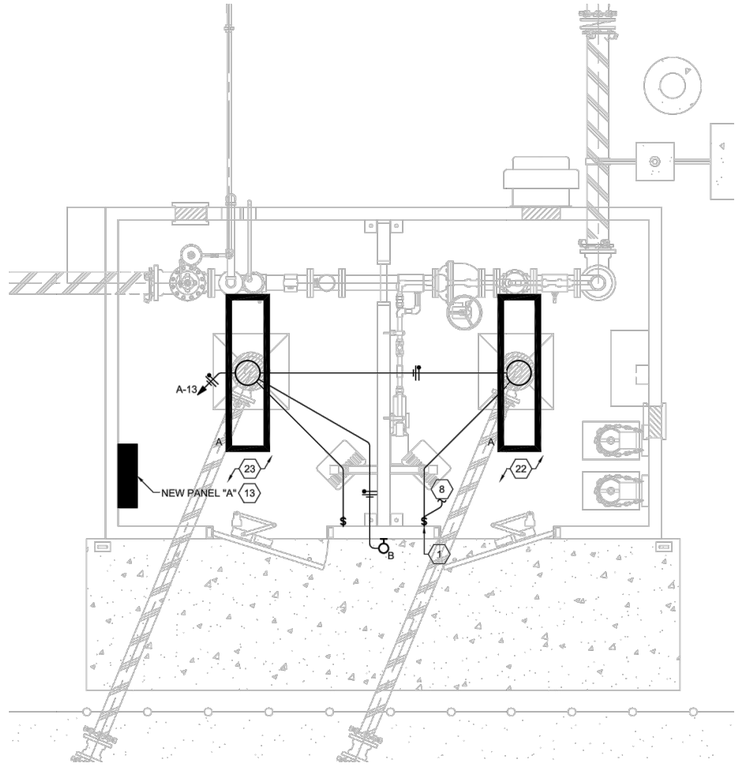
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CHLORINATION BUILDING - POWER PLAN

SCALE: 3/4" = 1'

0' 2' 4'
GRAPHIC SCALE



CHLORINATION BUILDING - LIGHTING PLAN

SCALE: 3/4" = 1'

0' 2' 4'
GRAPHIC SCALE

GENERAL NOTES

A. ALL RECEPTACLES SHALL BE GFCI PROTECTED, IN A WEATHERPROOF JUNCTION BOX AND MOUNTED AT +48" A.F.F.

LIGHT FIXTURE SCHEDULE

TYPE	FIXTURE DESCRIPTION	LAMPS	MOUNTING
A	INDUSTRIAL VAPOR TIGHT LED FIXTURE, 30W INPUT, UNIVERSAL VOLTAGE INPUT, 4000 LUMEN (NOMINAL) OUTPUT UL LISTED FOR WET LOCATIONS METALUX #4VT2-LD5-4-DR-UNV-L835-CD1-WL-SSL-VT2-CHAIN/SET-U	LED (30W) 4000 LM 3500°K	CHAIN HUNG AT 8'-0" A.F.F.
B	WALL PACK - LED, 32W INPUT, 120 VOLT INPUT, 2200 LUMEN (NOMINAL) OUTPUT, DARK SKY COMPLIANT WITH PHOTOCELL LUMARK #LDWP-FC-4B-120V-PE-WG/WPFC	LED (32W) 4000 LM 4000°K	MOUNT AT 8'-0" TO TOP OF FIXTURE

KEYED NOTES

1. PROVIDE AND INSTALL A SINGLE THROW, DOUBLE POLE LIGHTING SWITCH, 120 VOLT. SWITCH SHALL CONTROL THE LIGHTING FIXTURE AND EXHAUST FAN. REFER TO "CHLORINATOR BUILDING EXHAUST FAN CONTROL DIAGRAM" ON SHEET E-61 FOR ADDITIONAL REQUIREMENTS. INSTALL A NEMA 4X POLYESTER RATED COVER.
2. PROVIDE AND INSTALL 4 KW 240 VOLT, SINGLE PHASE ELECTRIC WALL MOUNTED HEATER WITH INTEGRAL THERMOSTAT, AS MANUFACTURED BY CHROMALOX #HVH-04-21-00-TL-D-00-0-0-S-HVW-1. FAN SHALL BE RATED FOR EXTERIOR USE. PROVIDE AND INSTALL FIELD INSTALLATION DISCONNECT KIT.
3. PROVIDE AND INSTALL A THROUGH WALL EXHAUST FAN - 430 CFM, 1/4 HP, 120 VOLTS, WITH BACKDRAFT DAMPER. EXHAUST FAN SHALL BE INTERLOCKED WITH DOOR CONTACT, LIGHT SWITCH, AND THERMOSTAT. REFER TO "CHLORINATOR BUILDING EXHAUST FAN CONTROL DIAGRAM" ON SHEET E-61 FOR ADDITIONAL REQUIREMENTS. MOTOR ENCLOSURE AND WIRING COMPONENTS SHALL BE RATED FOR EXTERIOR USE. MOUNTED AT 18"AFF. EXHAUST FAN SHALL BE CONNECTED TO LIGHTING CIRCUIT IN BUILDING.
4. PROVIDE AND INSTALL A COMBINATION STARTER/NON FUSED DISCONNECT SWITCH. 30 AMPS, 2 POLE, NEMA 4X POLYESTER ENCLOSURE, NEMA SIZE 0, H-A SELECTOR SWITCH. THE CHLORINE PUMP STARTER SHALL BE AUTO CONTROLLED FROM THE VC-22D SYSTEM.
5. PROVIDE AND INSTALL A COMBINATION STARTER/NON FUSED DISCONNECT SWITCH. 30 AMPS, 2 POLE, NEMA 4X POLYESTER ENCLOSURE, NEMA SIZE 0, H-A SELECTOR SWITCH. THE EXHAUST FAN SHALL BE AUTO CONTROLLED AS SHOWN ON "CHLORINATOR BUILDING EXHAUST FAN CONTROL DIAGRAM" ON SHEET E-61.
6. CHLORINE FEED BOOSTER PUMP, 1/3 HP, 120 VOLTS. CONTROLLED FROM THE CHLORINATION SYSTEM. EXTEND CONTROL CONDUCTORS AS REQUIRED BETWEEN THE STARTER AND CHLORINATION SYSTEM.
7. PROVIDE AND INSTALL A 120 VOLT THERMOSTAT FOR THE CONTROL OF EXHAUST FAN. REFER TO "CHLORINATOR BUILDING EXHAUST FAN CONTROL DIAGRAM" ON SHEET E-61 FOR ADDITIONAL REQUIREMENTS.
8. EXTEND CONDUIT AND CONDUCTORS FROM THE EXHAUST FAN STARTER TO THE DOOR SWITCH. REFER TO "CHLORINATOR BUILDING EXHAUST FAN CONTROL DIAGRAM" ON SHEET E-61 FOR ADDITIONAL INFORMATION.
9. CHLORINE GAS ALARM STROBE LIGHT, HEAVY-DUTY, RED IMPACT RESISTANT LENS, 120 VAC, NEMA 4 X ENCLOSURE, WALL BRACKET. ALARM STROBE SHALL BE VISIBLE FROM VIEW WINDOW IN CHLORINE ROOM DOOR. THE CHLORINE GAS DETECTOR SHALL ACTIVATE THE STROBE AT THE GAS ALARM SET POINT. PROVIDE AN INTERPOSING RELAY ON CHLORINE GAS DETECTOR ALARM OUTPUT. EXTEND POWER TO INTERPOSING RELAY AND STROBE FROM CHLORINE GAS DETECTOR AT 120 VAC. PROVIDE WITH CHLORINE SYSTEM. EXTEND CONDUIT AND CONDUCTORS FROM STROBE LIGHT LOCATION TO CONTROL PANEL. TERMINATE PER EQUIPMENT MANUFACTURER'S RECOMMENDATION. STROBE BEACON # 105STR-H5-120V-60HZ.
10. CHLORINE GAS DETECTOR, SIEMANS, WITH INTEGRAL ALARM HORN AND LED INDICATORS, SENSOR AUTO TEST FEATURE, AND BATTERY BACKUP, NEMA 4X ENLOSURE. MOUNT GAS DETECTOR/RECEIVER TO WALL AT 6' AFF TO TOP OF PANEL. MOUNT GAS SENSOR/TRANSMITTER 6' AFF ADJACENT TO CHLORINE GAS CYLINDERS, AND WIRE TO DETECTOR/RECEIVER WITH MANUFACTURER PROVIDED SENSOR CABLE. PROVIDE INTERLOCK WITH THE ALARM STROBE TO ACTIVATE ON GAS ALARM. PROVIDE WARNING ALARM AND SENSOR TROUBLE SIGNAL TO PLC. REFER TO SHEET E-32 TERMINATE PER EQUIPMENT MANUFACTURER'S RECOMMENDATION.
11. NON-PROPORTIONAL CHLORINE GAS FLOW CONTROL PANEL. PROVIDE AND IN NEMA 4X, HINGED ENCLOSURE. PROVIDE CONDUIT AND FIELD WIRING TO MOTOR CONTROLLER ACTUATOR. COORDINATE FINAL LOCATION OF EQUIPMENT GENERAL CONTRACTOR PRIOR TO EXTENDING CIRCUITING AND CONTROL CIRCUITS. CONTRACTORS TO SEAL CONDUIT PENETRATIONS.
12. CHLORINE TANK SCALE, WITH DIGITAL DISPLAY, NEMA 4X ENCLOSURE. TERMINATE POWER CIRCUIT TO EQUIPMENT PER MANUFACTURER'S RECOMMENDATION. FORCE FLOW MODEL GR150-2 WITH FORCE FLOW SOLO G2 DIGITAL INDICATOR.
13. NEW PANEL "A". REFER TO "POWER RISER DIAGRAM" ON SHEET E-52 FOR ADDITIONAL REQUIREMENTS.
14. REFER TO "POWER RISER DIAGRAM" ON SHEET E-52 FOR TVSS REQUIREMENTS.
15. EXTEND UNDERGROUND SERVICE FROM THE METER TO THE UTILITY POLE. REFER TO "POWER RISER DIAGRAM" ON SHEET E-52 AND "ELECTRICAL SITE PLAN" ON SHEET ES-01 FOR ADDITIONAL REQUIREMENTS.
16. PROVIDE AND INSTALL A BUILDING MOUNTED SERVICE DISCONNECT SWITCH. REFER TO POWER RISER ON SHEET E-52 FOR ADDITIONAL REQUIREMENTS.
17. FLOW METER. HOMERUN TO CIRCUIT INDICATED. REFER TO CONTROL FLOOR PLAN FOR ADDITIONAL REQUIREMENTS. ELSTER EVO Q4 WITH INTEGRAL TRANSMITTER INSTALL WITH FLOW IN PROPER DIRECTION AS INDICATED.
18. FLOW CONTROL VALVE CONTROLLER CLA-VAL VC-22D. THE CONTRACTOR SHALL COORDINATE THE INSTALLATION OF EQUIPMENT WITH THE GENERAL CONTRACTOR PRIOR TO THE EXTENSION OF CIRCUIT AND CONTROLS. TERMINATE POWER AND CONTROL CABLING TO CONTROLLER PER EQUIPMENT MANUFACTURERS RECOMMENDATION. PROVIDE AND INSTALL MANUFACTURER'S NEMA 4X HINGED COVER ENCLOSURE
19. PLC/RTU CABINET, NEMA 4X ENCLOSURE. THE CONTRACTOR SHALL COORDINATE THE INSTALLATION OF EQUIPMENT WITH THE GENERAL PRIOR TO THE EXTENSION OF CIRCUIT AND CONTROLS. TERMINATE POWER AND CONTROL CABLING TO CONTROLLER PER EQUIPMENT MANUFACTURER'S RECOMMENDATION. REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
20. DOOR LIMIT SWITCH WITH ADJUSTABLE LEVER ARM AS MANUFACTURED BY SQUARE D #9007C62B2, ARM #HA1. REFER TO CONTROL DIAGRAM FOR ADDITIONAL REQUIREMENTS.
21. THE CONTRACTOR SHALL PROVIDE AND INSTALL A SIGN SHOWING: "WARNING: FLASHING LIGHT INDICATES TOXIC CHLORINE GAS RELEASE. DO NOT ENTER WITHOUT SCBA GEAR", SIGN SHALL BE RED IN COLOR WITH WHITE 1" LETTERING, MOUNTED BELOW WINDOW.
22. ALL EXPOSED CONDUIT RUNS WITHIN THE CHLORINATION CHEMICAL SIDE OF THE BUILDING SHALL BE PVC CONDUIT. ALL HANGERS AND FITTINGS SHALL BE PVC COATED. CONDUITS THAT EXIT THE CHEMICAL SIDE OF THE BUILDING SHALL BE PROVIDED WITH A SEAL OFF FITTING AFTER EXITING. ALL EQUIPMENT AND MOTOR ENCLOSURE SHALL BE RATED FOR USE WITHIN A CORROSIVE AGENTS AND WET LOCATION.
23. ALL EXPOSED CONDUIT INSTALLED WITHIN THE CONTROL ROOM SIDE OF THE CHLORINATION BUILDING SHALL BE RIGID STEEL CONDUIT WITH THREADED CONDUIT BODIES. ALL EQUIPMENT ENCLOSURES AND CONDUIT INSTALLATION SHALL BE RATED FOR WET LOCATION.
24. 2#10 THWN Cu AND 1#10 THWN Cu GROUND IN 3/4" CONDUIT.
25. DOOR SWITCH INDICATED SHALL CONTROL EXHAUST FAN LOCATED IN CHLORINATION CHEMICAL SIDE OF THE BUILDING. REFER TO "CHLORINATOR BUILDING EXHAUST FAN CONTROL DIAGRAM" ON SHEET E-61 FOR ADDITIONAL INFORMATION.
26. NEW 120/240V-1Ø METER SOCKER PER NTUA REQUIREMENTS. REFER TO POWER RISER ON SHEET E-52 FOR ADDITIONAL REQUIREMENTS

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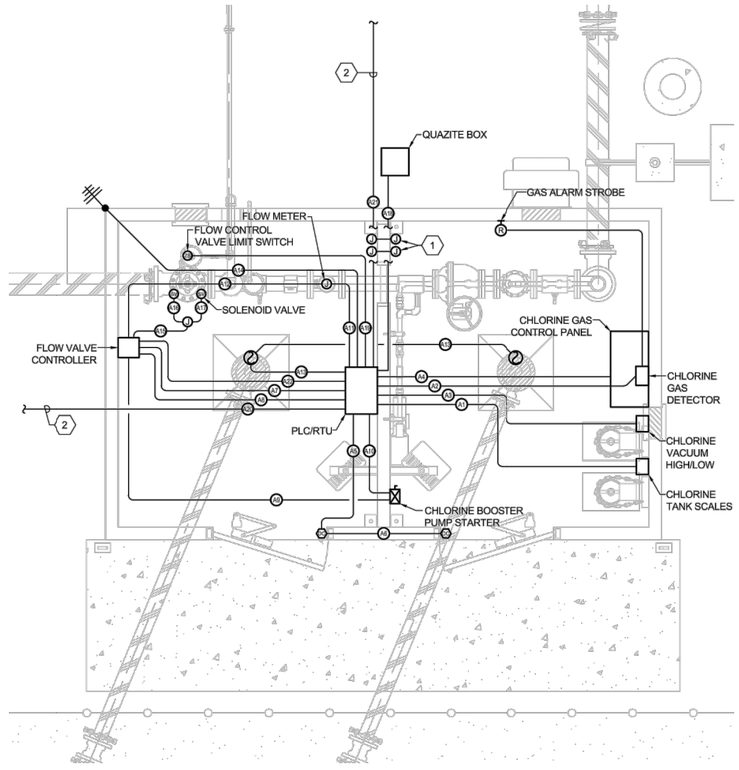
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Control Wiring Schedule

TAG #	FED FROM	TO	WIRE REQUIRMENTS
A1	Chlorine Scale	PLC Panel	2-2/C #18 Twisted Pair Shielded Cable - 1/2" Conduit
A2	Chlorine Gas Detector	PLC Panel	6 # 14, 1 # 14 Gnd - 1/2" Conduit
A3	High/Low Vacuum Switch	PLC Panel	6 # 14, 1 # 14 Gnd - 1/2" Conduit
A4	Chlorine Gas Control Panel	PLC Panel	4 # 14, 1 # 14 Gnd - 1/2" Conduit
A5	Door Switch	PLC Panel	2 # 14, 1 # 14 Gnd - 1/2" Conduit
A6	Door Switch	Door Switch	2 # 14, 1 # 14 Gnd - 1/2" Conduit
A7	PLC Panel	Flow Valve Control	2-2/C #18 Twisted Pair Shielded Cable - 1/2" Conduit
A8	Flow Valve Control	PLC Panel	2 # 14, 1 # 14 Gnd - 1/2" Conduit
A9	Flow Valve Control	Chlorine Booster Pump Starter	2 # 14, 1 # 14 Gnd - 1/2" Conduit
A10	Chlorine Booster Pump Starter	PLC Panel	2 # 14, 1 # 14 Gnd - 1/2" Conduit
A11	Flow Meter	PLC Panel	2 # 14, 1 # 14 Gnd - 1/2" Conduit
A12	Flow Meter	Flow Valve Control	2-2/C #18 Twisted Pair Shielded Cable - 1/2" Conduit
A13	Smoke Detectors	PLC	2 #14, 1 #14 Gnd - 1/2" Conduit
A14	Radio Transmitter Unit (RTU)	YAGI Antenna	1" Conduits each with Cable - Refer to Specification 27 43 30 2.4.C2 for Cable Requirements
A15	Flow Valve Control	Solenoid Valves J-box	3 # 14, 1 # 14 Gnd - 1/2" Conduit
A16	Solenoid Valve J-box	Solenoid Valve Open	2 # 14, 1 # 14 Gnd - 1/2" Conduit
A17	Solenoid Valve J-box	Solenoid Valve Closed	2 # 14, 1 # 14 Gnd - 1/2" Conduit
A18	Fiber Optic Transmitter Unit	Quazite Box	2" Conduit
A19	Flow Control Valve Limit Switch	PLC Panel	2 # 14, 1 # 14 Gnd - 1/2" Conduit
A20	Booster Pump Control Panel	Chlorination Building PLC	2#14, 1#14 GND - 3/4" Conduit
A21	Pressure Transducer	PLC/RTU	4#14 - 3/4" Conduit
A22	VC-22D	PLC/RTU	1 - 2/C #18 Twisted Pair Shielded Cable - 1/2" Conduit.



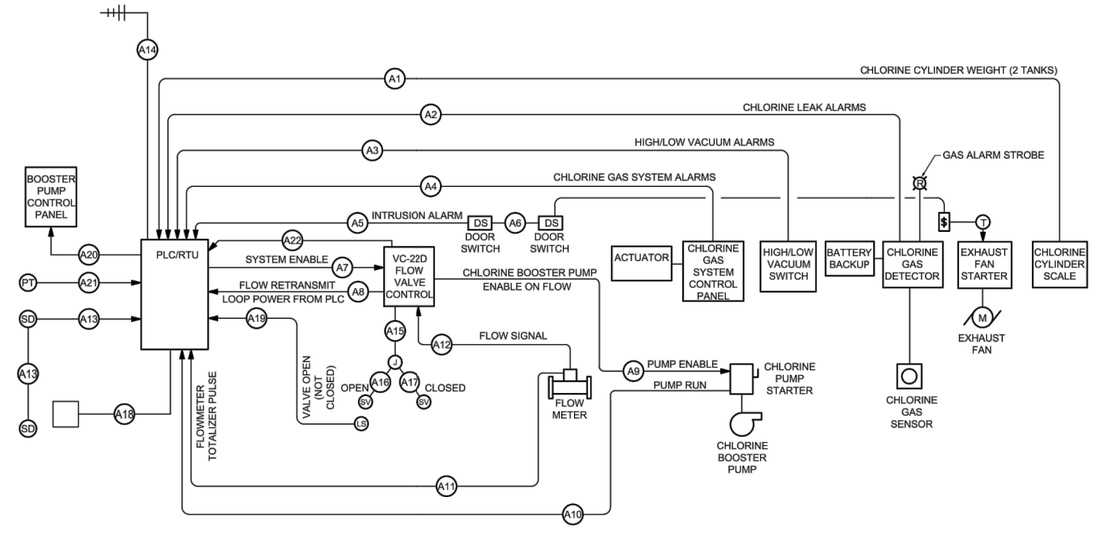
KEYED NOTES

1. PROVIDE (2) 1" CONDUIT SLEEVES THROUGH WALL WITH J-BOXES ON EACH SIDE OF WALL AND FIRE SEAL GAS TIGHT. ALL CONTROL CABLES AND WIRING BETWEEN ROOMS SHALL BE ROUTED THROUGH SLEEVES. ONE CONDUIT FOR ANALOG CABLES THE OTHER FOR DIGITAL CABLES. SIZE J-BOXES PER NUMBER OF CONDUITS TERMINATIONS.
2. REFER TO "ELECTRICAL SITE PLAN" ON SHEET ES-01 FOR CONTINUATION.

CHLORINATION BUILDING - CONTROL PLAN

SCALE: 3/4" = 1'

0' 2' 4'
GRAPHIC SCALE



REACH 10.2.1 CHLORINATION BUILDING CONTROL RISER DIAGRAM

SCALE: NONE

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Client: The Navajo Nation
Location: Standing Rock, NM

CONTROL PLAN
NAVAJO GALLUP WATER SUPPLY PROJECT
BEACON BISTI N9 - REACH 10.2
McKINLEY COUNTY, NEW MEXICO
SECTION 1, T. 18 N., R. 16 W.

NOT FOR CONSTRUCTION

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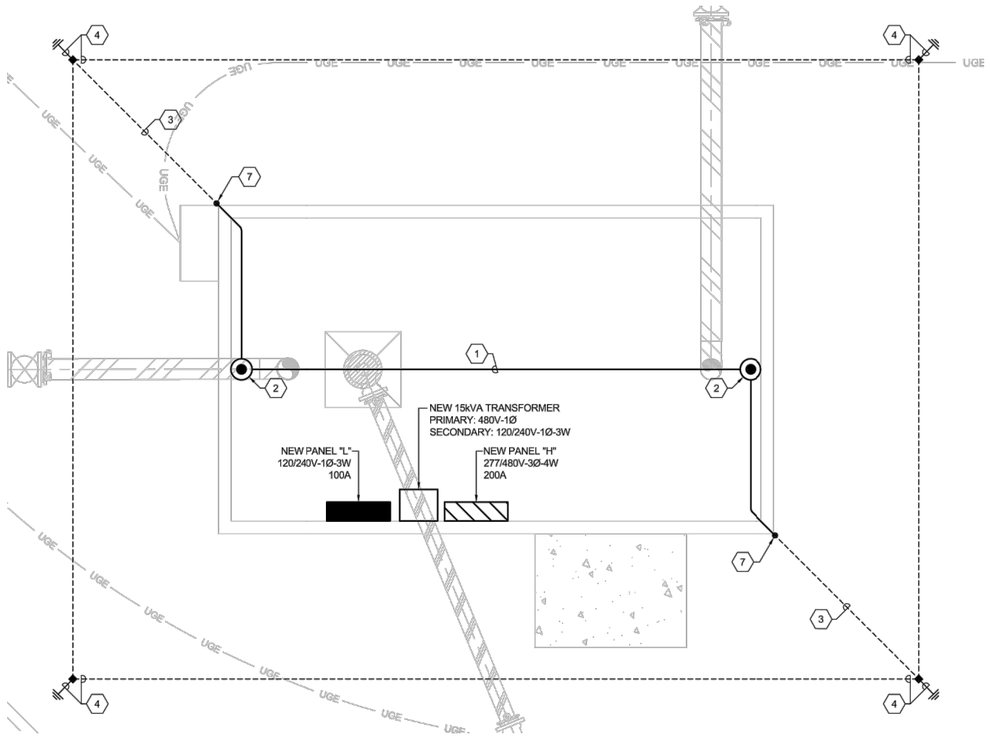
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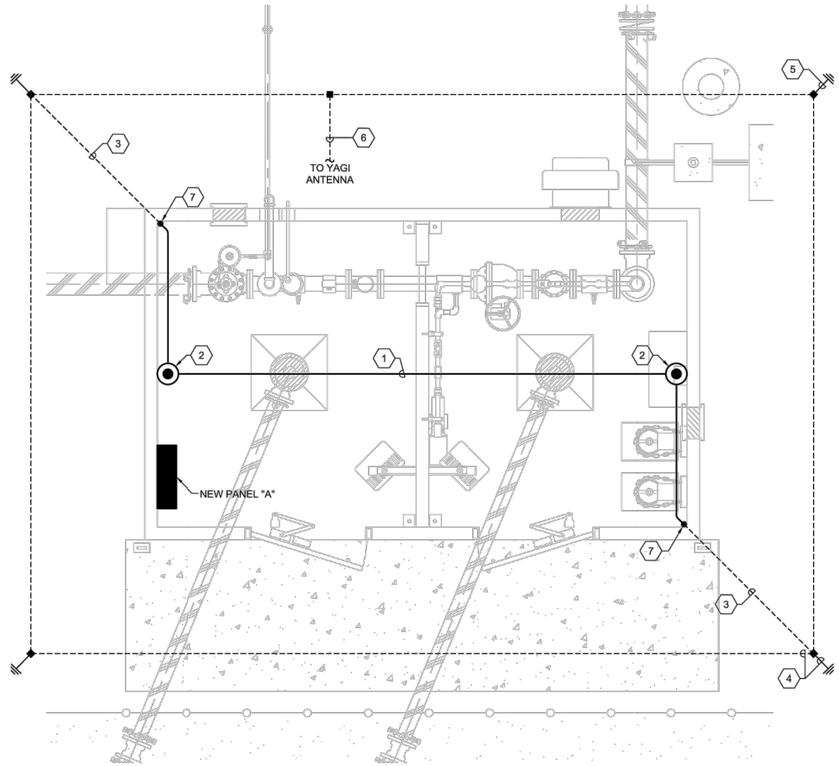
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Project No: #####

Sheet: E-21A


4
4
3
7
UGE
UGE
UGE



CHLORINATION BUILDING - LIGHTNING PROTECTION PLAN (8)

SCALE: 3/4" = 1'

0' 2' 4'

GRAPHIC SCALE

GENERAL NOTES

A. REFER TO LIGHTNING PROTECTION SPECIFICATION SECTION 26 60 10 FOR ADDITIONAL INFORMATION.

B. CONTRACTOR SHALL PROVIDE LIGHTNING PROTECTION SYSTEM DRAWING BEFORE INSTALLATION, INCLUDING GROUND RODS AND GROUNDING CABLES (BELOW GROUND AND ABOVE ROOF)

C. AFTER THE SYSTEM HAS BEEN INSTALLED, THE UL LISTED INSTALLER SHALL COMPLETE AND SUBMIT THE CERTIFICATION APPLICATION.

D. THE UL LISTED INSTALLER SHALL FORWARD THE CERTIFICATION TO THE OWNER AND PROVIDE PROOF THAT THE LIGHTNING PROTECTION SYSTEM IS IN COMPLIANCE WITH UL, NFPA, OR U.S. GOVERNMENT STANDARDS.

E. GROUND ROD AND BUILDING COUNTER POISE DEPTH SHALL BE 24" BELOW GRADE.

F. ALL GROUNDING WIRING SHALL BE PROPERLY CONNECTED PER SPECS SECTION 26 45 00.

G. THE CONTRACTOR SHALL SELECT AN ADHESIVE FOR THE AIR TERMINALS THAT MANUFACTURED RECOMMENDED AND IS COMPATIBLE FOR USE WITH THE ROOFING SYSTEM.

H. ALL WIRING CONNECTIONS, AIR TERMINAL BASES, CLAMPS, AND PLATES THAT COME IN CONTACT WITH THE ROOFING MATERIAL SHALL BE INSTALLED USING AN APPROVED ADHESIVE. THE LIGHTNING PROTECTION SYSTEM INSTALLER SHALL NOT CREATE ANY PENETRATION IN THE ROOF WHEN INSTALLING THEIR EQUIPMENT.

I. ALL WIRING CONNECTORS, AIR TERMINALS, CLAMPS, ETC SHALL BE UL APPROVED FOR A LIGHTNING PROTECTION SYSTEM.

KEYED NOTES (8)

1. LIGHTNING PROTECTION CLASS 1 ROOF-MOUNTED LATERAL CONDUCTOR AND MOUNTING HARDWARE. LATERAL CONDUCTOR SHALL BE ALUMINUM.
2. LIGHTNING PROTECTION AERIAL TERMINAL. 1/2" x 18" TUBULAR COPPER AERIAL TERMINAL AND MOUNTING HARDWARE, MOUNTED AT ROOF PARAPET, PENTHOUSE AND ROOFTOP UNITS AS INDICATED.
3. LIGHTNING PROTECTION 2/0 BARE COPPER DOWN-CONDUCTOR IN 1" CONDUIT.
4. LIGHTNING PROTECTION COUNTERPOISE SYSTEM. ALL CONNECTIONS SHALL BE EXO-THERMIC WELDS.
5. GROUND ROD. 3/4" X 10'-0" GROUND ROD.
6. BOND ANTENNA CABLE CONDUIT AND ANTENNA MAST TO A 8' X 5/8" COPPER-CLAD STEEL GROUND ROD AND TO BUILDING COUNTER POISE WITH #4 COPPER GROUND CONDUCTORS.
7. TRANSITION FROM ALUMINUM CONDUCTOR TO COPPER CONDUCTOR USING A LISTED COPPER TO ALUMINUM WIRE CONNECTOR.
8. LIGHTNING PROTECTION SYSTEM LAYOUT ON THIS PLAN IS FOR BIDDING PURPOSES ONLY. INSTALLATION TO BE PER NFPA-780, U.S. GOVERNMENT STANDARDS AND SPECIFICATIONS SECTION 26 60 10. SYSTEM SHALL BE PROVIDED WITH A MASTER LABEL.

SYMBOL LEGEND - LIGHTNING PROTECTION

- LIGHTNING AIR TERMINAL
- LIGHTNING CABLE CADWELD
- GROUND ROD
- EXPOSED #2/0 BARE GROUND CABLE
- CONCEALED BELOW GRADE #2/0 BARE GROUND CABLE COUNTER POISE

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Client: The Navajo Nation
Location: Standing Rock, NM

LIGHTNING PROTECTION PLAN
NAVAJO GALLUP WATER SUPPLY PROJECT
BEACON BISTI N9 - REACH 10.2
McKINLEY COUNTY, NEW MEXICO
SECTION 1, T. 18 N., R. 16 W.

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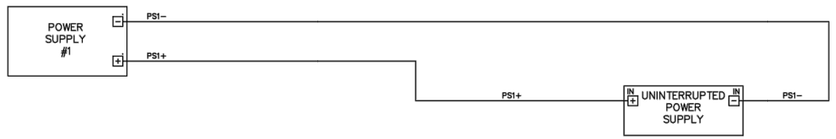
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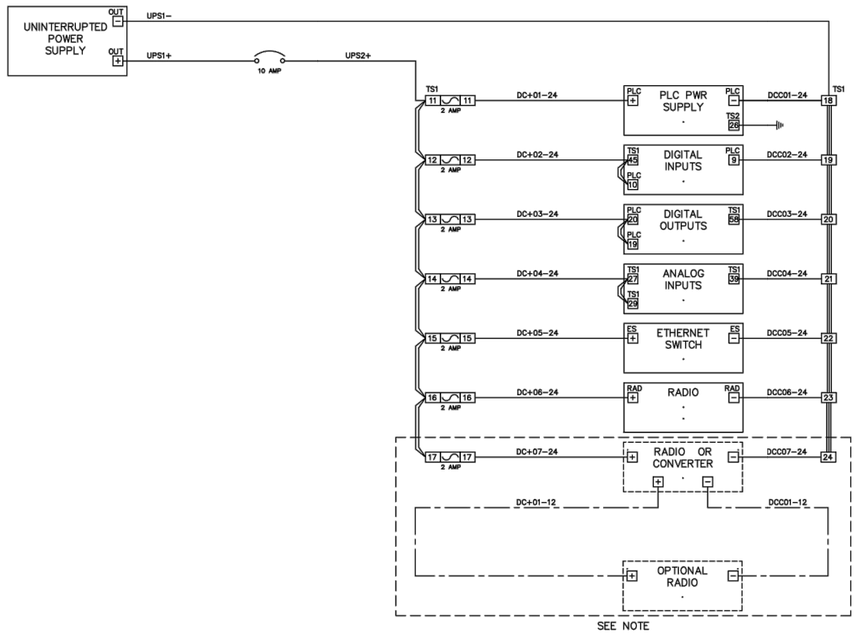
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24VDC DISTRIBUTION

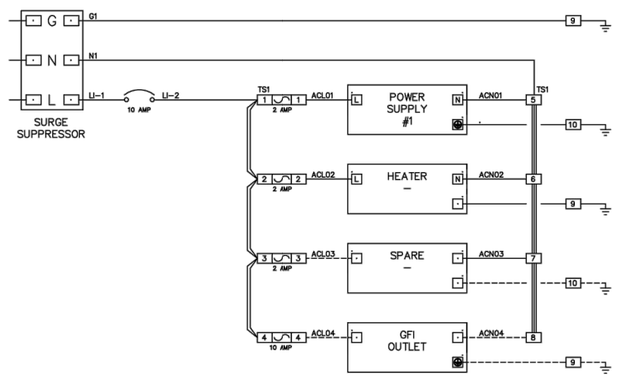


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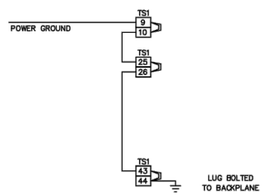


SEE NOTE

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:			
DR'N: CHK'D:			
APVD:			

TITLE: AC TANK CONTROL PANEL
POWER DISTRIBUTION

W.O.#

SHEET 4 OF 6

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NTUA DIAGRAM
NAVAJO GALLUP WATER SUPPLY PROJECT
BEACON BISTI N9 - REACH 10.2
McKINLEY COUNTY, NEW MEXICO
SECTION 1, T. 18 N., R. 16 W.

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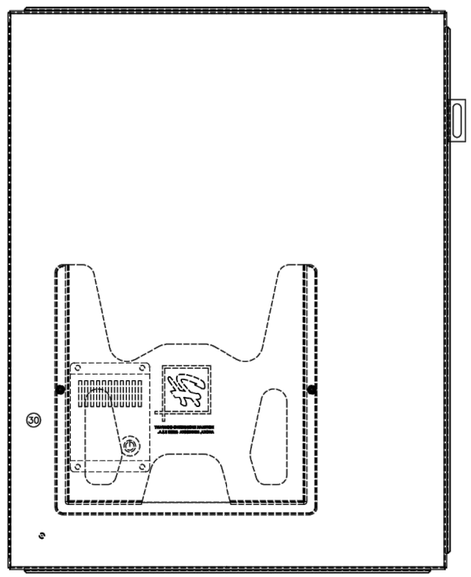
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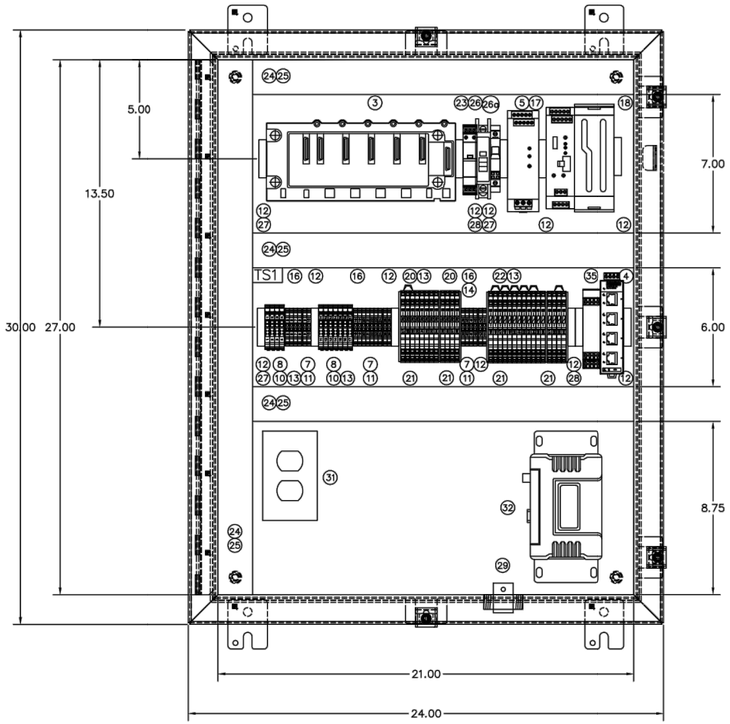
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BILL OF MATERIALS

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 STX	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-12-24DC/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
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NAVAJO TRIBAL UTILITY AUTHORITY

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TITLE: AC TANK CONTROL PANEL BACKPLANE | W.O.#

SHEET 5 OF 6

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BEACON BISTI N9 - REACH 10.2
McKINLEY COUNTY, NEW MEXICO
SECTION 1, T. 18 N., R. 16 W.

NOT FOR CONSTRUCTION

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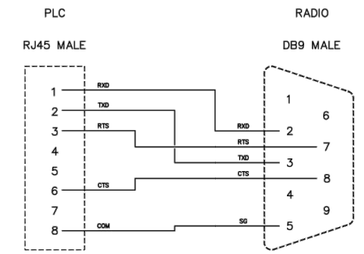
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A CABLE DIAGRAM: PLC TO RADIO

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NAVAJO TRIBAL UTILITY AUTHORITY

SCALE: NONE

DATE: .

DRN. . CHD. .

APVD. .

REVISIONS | BY | DATE

TITLE: AC TANK CONTROL PANEL
CABLE PINOUT

SHEET 6 OF 6

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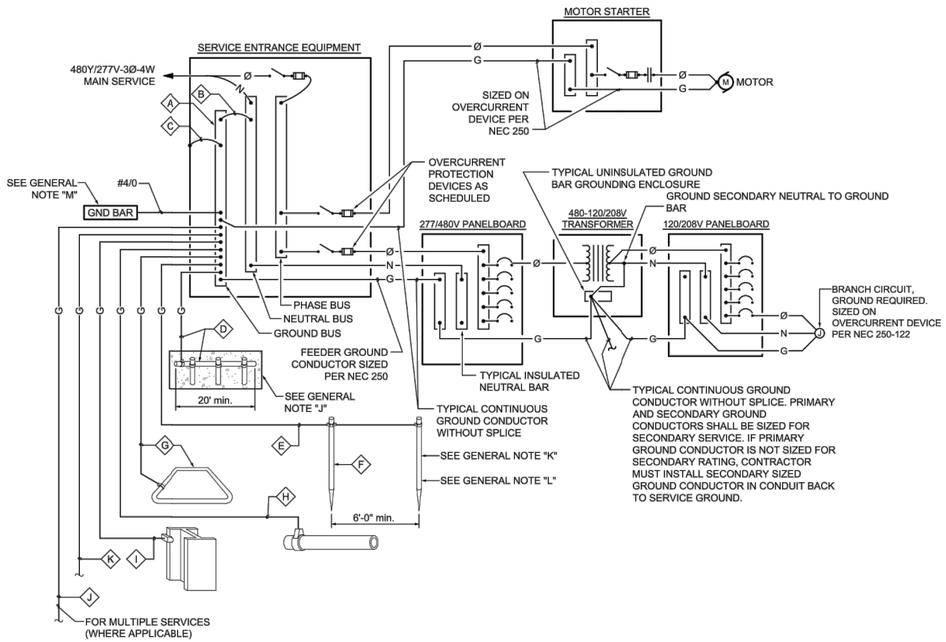
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GROUNDING SYSTEM DIAGRAM 480Y/277V

NOT TO SCALE

GROUNDING SYSTEM GENERAL NOTES 2018

A. THE GROUNDING ELECTRODE SYSTEM SHALL CONSIST OF ITEMS (A) (B) (C) (D) (E) (F) AND (G), WHERE APPLICABLE.

B. ITEMS (H) (I) AND (J) MUST BE BONDED TOGETHER AND TO THE GROUNDING ELECTRODE SYSTEM WHEN THEY ARE PRESENT.

C. ITEM (D), CONCRETE ENCASED ELECTRODE (UFER) SHALL HAVE UFER SUPPORT CONSISTING OF 5/8" x 10' COPPER GROUND ROD CUT INTO 2' SECTIONS AND DRIVEN FOR SUPPORT OF UFER CONDUCTOR. ONLY COPPER TO COPPER CONNECTIONS ARE ACCEPTABLE. DO NOT USE RE-BAR FOR UFER SUPPORT. (THIS IS TO AVOID THE HARMFUL EFFECTS OF DISSIMILAR METALS IN CONTACT.) A U.L. LISTED COPPER TO RE-BAR CLAMP (SUCH AS GRAVES "JONES BOND" SYSTEM) IS AN APPROVED ALTERNATIVE.

D. THIS DETAIL IS PROVIDED IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE, ARTICLE 250, PERTAINING TO THE ``GROUNDING ELECTRODE SYSTEM".

E. ALL SPLICING AND UNDERGROUND CONNECTIONS SHALL BE ACCOMPLISHED VIA EXOTHERMIC WELD (CAD-WELD) ONLY.

F. ALL CONDUCTOR SIZING INDICATED ON THE GROUNDING SCHEDULE ARE FOR COPPER CONDUCTORS. ALUMINUM IS NOT PERMITTED.

G. ANY VARIANCES FROM THIS DIAGRAM AND ASSOCIATED SCHEDULE AND NOTES MUST BE REQUESTED AND APPROVED IN WRITING PRIOR TO INSTALLATION.

H. ALL INSTALLATIONS SHALL COMPLY WITH THE LATEST ADOPTED EDITION OF N.E.C. ARTICLE 250 (ALL SUBPARAGRAPHS) AND ALL STATE AND LOCAL REQUIREMENTS.

I. THE GROUNDING SYSTEM SHALL PROVIDE LESS THAN (4) FOUR OHMS RESISTANCE TO GROUND AT THE SERVICE CONNECTION. THE RESULTS SHALL BE VERIFIED BY AN INDEPENDENT TESTING AGENCY VIA GROUND TEST (FALL-OF-POTENTIAL) AND SUBMITTED TO ELECTRICAL ENGINEER UPON COMPLETION OF PROJECT.

J. IF A 20'-0" LONG (MINIMUM) CONCRETE ENCASED ELECTRODE IS NOT AVAILABLE, CONTRACTOR MAY INSTALL A 20'-0" (MINIMUM) UFER GROUND 30" BELOW GRADE WITH AT LEAST TWO GROUND RODS (ONE AT EACH END).

K. PROVIDE SECOND GROUND ROD AT LEAST 6'-0" FROM INITIAL GROUND ROD.

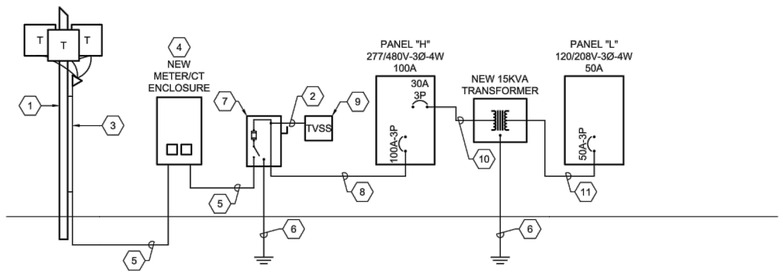
L. WHEN INDICATED ON DRAWINGS, PROVIDE AND INSTALL HORIZONTAL CHEMICAL GROUND ELECTRODE KIT. 10' COPPER ELECTRODE LENGTH, FACTORY ATTACHED 6' #4/0 COPPER PIGTAIL, AND HIGH DENSITY POLYETHYLENE INSPECTION WELL & COVER. ERICO #ECRH102Q6U OR APPROVED EQUAL. CONTRACTOR SHALL USE MANUFACTURER RECOMMENDED ELECTROLYTIC SALTS, BENTONITE CLAY BACKFILL MATERIAL, AND GROUND ENHANCEMENT MATERIAL (GEM). CONTRACTOR SHALL INSTALL PER MANUFACTURERS RECOMMENDATIONS. CONTRACTOR SHALL MAINTAIN 6'-0" SEPARATION (MINIMUM) BETWEEN GROUNDING ELECTRODES. INSPECTION WELL INSTALLED FLUSH WITH FINAL GRADE.

M. PROVIDE AND INSTALL 1/4" X 4" X 18" COPPER MAIN GROUNDING BUS BAR WITH BRACKETS AND INSULATORS. CONTRACTOR SHALL COORDINATE PRE-DRILLED (12)-1/4" HOLES REQUIREMENTS WITH PNM (OWNER). ERICO OR APPROVED EQUAL. EXTEND 1#4/0 CU GROUNDING CONDUCTOR TO MAIN GROUND. COORDINATE EXACT LOCATION AND ROUTING IN THE FIELD. CONTRACTOR SHALL MAKE ALL FINAL TERMINATIONS AS REQUIRED.

GROUNDING SCHEDULE

	(A) FACTORY INSTALLED GROUND BUS BAR	(B) INTEGRATED BUS BAR MAIN BOND JUMPER	(C) INTEGRATED BUS BAR CASE BOND JUMPER	(D) CONCRETE ENCASED ELECTRODE (UFER)	(E) GROUNDING ELECTRODE CONDUCTOR TO ROD, PIPE OR PLATE	(F) CU or CU-CLAD STEEL GROUND ROD	(G) COPPER GROUND RING CONDUCTOR	(H) METALLIC PIPING BONDING CONDUCTOR	(I) BUILDING STEEL BONDING CONDUCTOR	(J) MULTIPLE SERVICE BONDING CONDUCTOR	(K) TELEPHONE SYSTEM GROUNDING CONDUCTOR
CODE REFERENCE AMPACITY		N.E.C. 250.102(C)	N.E.C. 250.102(C)	N.E.C. 250.52(A)(3) 250.66(B)	N.E.C. 250.52(A)(5) 250.52(A)(7) 250.66(A)	N.E.C. 250.52(A)(5)	N.E.C. 250.52(A)(4) 250.66(C)	N.E.C. 250.52(A)(1) 250.66	N.E.C. 250.50(A)(2) 250.66	N.E.C. 250.66	.
200 AMP		#4	#4	#4	#6	5/8"x8'	#2	#4	#4	#4	#6
225 AMP		#2	#2	#4	#6	5/8"x8'	#2	#2	#2	#2	#6
400 AMP		#1/0	#1/0	#4	#6	5/8"x8'	#1/0	#1/0	#1/0	#1/0	#6
600 AMP		#2/0	#2/0	#4	#6	5/8"x8'	#2/0	#2/0	#2/0	#2/0	#6

SHALL BE SIZED TO ACCOMMODATE ALL GROUND WIRE LUGS AS INDICATED ON GROUNDING DIAGRAM AND/OR REFERENCED ELSEWHERE ON PLANS OR SPECIFICATIONS



POWER RISER DIAGRAM - PUMPING BUILDING

PANEL SCHEDULE - NEW PANEL "H"

LOCATION: Pumping Building | VOLTAGE: 480Y/277V-3Ph, 4Wire | AMPACITY: 100A | Main: 100A MCB
FED FROM: Utilty Transformer | ENCLOSURE: NEMA 1 | MOUNTING: Surface | AIC: TBD

BKR SIZE	DESCRIPTION	DEMAND CODE	LOAD (VA)	Ckt #	LOAD (VA) PHASE A	PHASE B	PHASE C	Ckt #	LOAD (VA)	DEMAND CODE	DESCRIPTION	BKR SIZE
70A-3P	BOOSTER PUMP SKID	LMECH	15000	1	15092			2	92	SUB	PANEL "L" THROUGH 15 KVA TRANSFORMER	30A-3P
		LMECH	15000	3		15540		4	540	SUB		
		LMECH	15000	5			15540	6	540	SUB		
20A-1P	SPARE			7				8			SPARE	20A-1P
20A-1P	SPARE			9				10			SPARE	20A-1P
20A-1P	SPARE			11				12			SPARE	20A-1P
20A-1P	SPARE			13				14			SPARE	20A-1P
20A-1P	SPARE			15				16			SPARE	20A-1P
20A-1P	SPARE			17				18			SPARE	20A-1P
20A-1P	SPARE			19				20			SPARE	20A-1P
20A-1P	SPARE			21				22			SPARE	20A-1P
20A-1P	SPARE			23				24			SPARE	20A-1P

	PHASE A	PHASE B	PHASE C
Total Phase Loads (VA):	15,092	15,540	15,540
Total Phase Loads (Amps):	54.5	56.1	56.1
Total Connected Loads (kVA):	46.2		

Notes: 1. New Panelboard
2. 24-Circuit
3. Copper Neutral and Ground Bus Bars
4. Door-in-Door Enclosure.

LOAD CALCULATIONS - NEW PANEL "H"

	Connected (kVA) by Type:		Subfeed (Panel "L")		Estimated Demand (kVA) by Type:			
LTG	Lighting:		Lighting:	0.1	Lighting at 125% (kVA):	0.1	Total Estimated Demand (kVA):	57.4
REC	Receptacles:		Receptacles:	1.1	Receptacles:	1.1	Amps at 480Y/277V-3 Phase (Amps):	69.1
					10kVA at 100% (kVA):	1.1	Panel Ampacity (Rating):	100
					Rest at 50% (kVA):	0.0		
EQP	Equipment:		Equipment:		Eqp at 100% (kVA):		Spare Capacity:	30.9%
LMECH	Largest Mech:	45.0	Largest Mech:		Largest at 125% (kVA):	56.3		
MECH	Mechanical:		Mechanical:		Rest at 100% (kVA):			

PANEL SCHEDULE - NEW PANEL "L"

LOCATION: Pumping Building | VOLTAGE: 208Y/120V-3Ph, 4Wire | AMPACITY: 100A | Main: 50A MCB
FED FROM: 30A-3P IN Panel H | ENCLOSURE: NEMA 1 | MOUNTING: Surface | AIC: 10,000

BKR SIZE	DESCRIPTION	DEMAND CODE	LOAD (VA)	Ckt #	LOAD (VA) PHASE A	PHASE B	PHASE C	Ckt #	LOAD (VA)	DEMAND CODE	DESCRIPTION	BKR SIZE
20A-1P	LIGHTING	LTG	92	1	92			2			SPARE	20A-1P
20A-1P	RECEPTACLES	REC	540	3		540		4			SPARE	20A-1P
20A-1P	RECEPTACLES	REC	540	5			540	6			SPARE	20A-1P
20A-1P	SPARE			7				8			SPARE	20A-1P
20A-1P	SPARE			9				10			SPARE	20A-1P
20A-1P	SPARE			11				12			SPARE	20A-1P
20A-1P	SPARE			13				14			SPARE	20A-1P
20A-1P	SPARE			15				16			SPARE	20A-1P
20A-1P	SPARE			17				18			SPARE	20A-1P
20A-1P	SPARE			19				20			SPARE	20A-1P
20A-1P	SPARE			21				22			SPARE	20A-1P
20A-1P	SPARE			23				24			SPARE	20A-1P

	PHASE A	PHASE B	PHASE C
Total Phase Loads (VA):	92	540	540
Total Phase Loads (Amps):	0.8	4.5	4.5
Total Connected Loads (kVA):	1.2		

Notes: 1. New Panelboard
2. 24-Circuit
3. Copper Neutral and Ground Bus Bars
4. Door-in-Door Enclosure.

LOAD CALCULATIONS - NEW PANEL "L"

	Connected (kVA) by Type:			Estimated Demand (kVA) by Type:			
LTG	Lighting:	0.1		Lighting at 125% (kVA):	0.1	Total Estimated Demand (kVA):	1.2
REC	Receptacles:	1.1		Receptacles:	1.1	Amps at 208Y/120V-3 Phase (Amps):	3.3
				10kVA at 100% (kVA):	1.1	Panel Ampacity (Rating):	50
				Rest at 50% (kVA):	0.0		
EQP	Equipment:			Eqp at 100% (kVA):		Spare Capacity:	93.4%
LMECH	Largest Mech:			Largest at 125% (kVA):			
MECH	Mechanical:			Rest at 100% (kVA):			

KEYED NOTES

1. PROVIDE AND INSTALL A 25'-0" SOUTHERN PINE CLASS 4 WOOD POLE FOR THE INSTALLATION OF RISER.
2. 3" CONDUIT BURIED A MINIMUM OF 36" (OR PER LOCAL UTILITY REQUIREMENTS) WITH RED WARNING TAPE BURIED 12" ABOVE CONDUIT FOR PRIMARY CONDUCTORS. COORDINATE EXACT REQUIREMENTS WITH NTUA PRIOR TO WORK BEING PERFORMED. PROVIDE AND INSTALL PULLTAPE IN CONDUIT.
3. PROVIDE A 3" RGS CONDUIT ON POLE RISER WITH CONDUCTORS. COORDINATE INSTALLATION WITH UTILITY COMPANY PRIOR TO PROCEEDING WITH INSTALLATION OF CONDUITS
4. PROVIDE AND INSTALL A 480VOLT CT/METER ENCLOSURE PER THE LOCAL UTILITY COMPANY REQUIREMENTS. REFER TO "ELECTRICAL SITE PLAN" ON SHEET ES-11 FOR LOCATION.
5. 4#2 THWN Cu IN 1 1/4" CONDUIT OR 4#1/0 XHHW Al IN 1 1/2" CONDUIT. CONDUIT SIZE IS MINIMUM OR PER LOCAL UTILITY REQUIREMENTS.
6. REFER TO "GROUNDING SYSTEM DIAGRAM - 277/480 VOLT SYSTEM" ON THIS SHEET FOR ADDITIONAL INFORMATION.
7. PROVIDE AND INSTALL A FUSIBLE DISCONNECT SWITCH, 100 AMPS, 600 VOLTS, 3 POLE, SOLID NEUTRAL AND GROUND LUG, NEMA 3R ENCLOSURE. FUSE AT 100 AMPS. PROVIDE A MINIMUM WORKING CLEARANCE OF 3'-0" WIDE IN FRONT OF DISCONNECT SWITCH PER NEC.
8. 4#2 THWN Cu AND 1#8 THWN Cu GROUND IN 1 1/4" CONDUIT OR 4#1/0 XHHW Al AND 1#6 XHHW Al GROUND IN 1 1/2" CONDUIT.
9. PROVIDE AND INSTALL A TRANSIENT VOLTAGE SURGE SUPPRESSION DEVICE. THE TVSS SHALL BE MANUFACTURED BY RAYCAP #277-3Y-M3-4-06-C-H OR APPROVED EQUAL, NEMA 3R ENCLOSURE.
10. 3#10 THWN Cu AND 1#10 THWN Cu GROUND IN 3/4" CONDUIT.
11. 4#6 THWN Cu AND 1#10 THWN Cu GROUND IN 1" CONDUIT.

Revision	Date	Description	By	Chk'd

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Client: The Navajo Nation
Location: Standing Rock, NM

POWER RISER DIAGRAM AND DETAILS - SURGE TANK
NAVAJO GALLUP WATER SUPPLY PROJECT
BEACON BISTI N9 - REACH 10.2
McKINLEY COUNTY, NEW MEXICO
SECTION 1, T. 18 N., R. 16 W.

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TRG/rhp	TRG/rhp	TRG/tfr

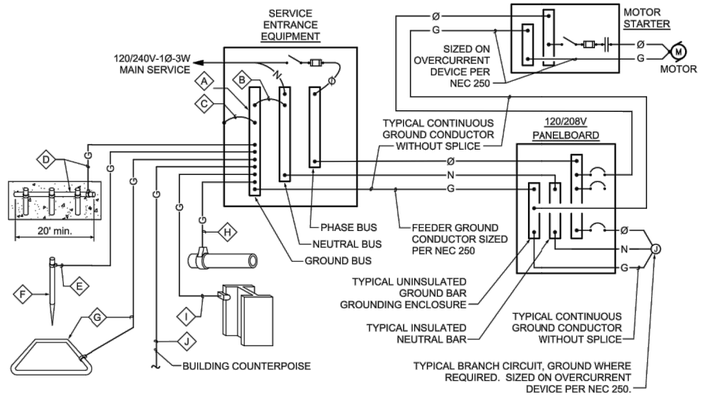
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Vert:
Project No: #####
Sheet: E-51A

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GROUNDING SYSTEM DIAGRAM - 120/240 VOLT SYSTEM

NOT TO SCALE

GROUNDING SYSTEM GENERAL NOTES

A. THE GROUNDING ELECTRODE SYSTEM SHALL CONSIST OF ITEMS (A) (B) (C) (D) (E) (F) AND (G), WHERE APPLICABLE.

B. ITEMS (H) (I) AND (J) MUST BE BONDED TOGETHER AND TO THE GROUNDING ELECTRODE SYSTEM WHEN THEY ARE PRESENT.

C. ITEM (D) CONCRETE ENCASED ELECTRODE (UFER) SHALL HAVE UFER SUPPORT CONSISTING OF 5/8" x 10' COPPER GROUND ROD CUT INTO 2' SECTIONS AND DRIVEN FOR SUPPORT OF UFER CONDUCTOR. ONLY COPPER TO COPPER CONNECTIONS ARE ACCEPTABLE. DO NOT USE RE-BAR FOR UFER SUPPORT. (THIS IS TO AVOID THE HARMFUL EFFECTS OF DISSIMILAR METALS IN CONTACT.) A U.L. LISTED COPPER TO RE-BAR CLAMP (SUCH AS GRAVES "JONES BOND" SYSTEM) IS AN APPROVED ALTERNATIVE.

D. THIS DETAIL IS PROVIDED IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE, ARTICLE 250, PERTAINING TO THE ``GROUNDING ELECTRODE SYSTEM".

E. ALL SPLICING SHALL BE ACCOMPLISHED VIA EXOTHERMIC WELD (CAD-WELD) ONLY.

F. ALL CONDUCTOR SIZING INDICATED ON THE GROUNDING SCHEDULE ARE FOR COPPER CONDUCTORS. ALUMINUM IS NOT PERMITTED.

G. ANY VARIANCES FROM THIS DIAGRAM AND ASSOCIATED SCHEDULE AND NOTES MUST BE REQUESTED AND APPROVED IN WRITING PRIOR TO INSTALLATION.

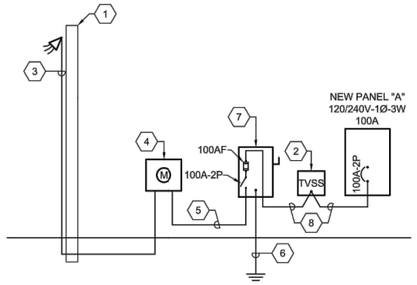
H. ALL INSTALLATIONS SHALL COMPLY WITH THE LATEST ADOPTED EDITION OF N.E.C. ARTICLE 250 (ALL SUBPARAGRAPHS) AND ALL STATE AND LOCAL REQUIREMENTS.

I. THE GROUNDING SYSTEM SHALL PROVIDE LESS THAN (4) FOUR OHMS RESISTANCE TO GROUND AT THE SERVICE CONNECTION. THE RESULTS SHALL BE VERIFIED BY AN INDEPENDENT TESTING AGENCY VIA GROUND TEST (FALL-OF-POTENTIAL) AND SUBMITTED TO ELECTRICAL ENGINEER UPON COMPLETION OF PROJECT.

GROUNDING SCHEDULE

CODE REFERENCE / AMPACITY	(A) FACTORY INSTALLED GROUND BUS BAR	(B) INTEGRATED BUS BAR MAIN BOND JUMPER	(C) INTEGRATED BUS BAR CASE BOND JUMPER	(D) CONCRETE ENCASED ELECTRODE (UFER)	(E) GROUNDING ELECTRODE CONDUCTOR TO ROD, PIPE OR PLATE	(F) CU or CU-CLAD STEEL GROUND ROD	(G) COPPER GROUND RING CONDUCTOR	(H) METALLIC PIPING BONDING CONDUCTOR	(I) BUILDING STEEL BONDING CONDUCTOR	(J) BUILDING COUNTER POISE
		N.E.C. 250.102	N.E.C. 250.102	N.E.C. 250.50(c) 250.66(b)	N.E.C. 250.52(c) 250.52(d) 250.66(a)	N.E.C. 250.52(c)(2)	N.E.C. 250.50(d) 250.66(c)	N.E.C. 250.50(a) 250.66	N.E.C. 250.50(b) 250.66	N.E.C. 250.66
100 AMP		#4	#4	#4	#6	5/8"x8'	#2	#4	#4	#2/0
225 AMP		#2	#2	#4	#6	5/8"x8'	#2	#2	#2	#2

SHALL BE SIZED TO ACCOMMODATE ALL GROUND WIRE LUGS AS INDICATED ON GROUNDING DIAGRAM AND/OR REFERENCED ELSEWHERE ON PLANS OR SPECIFICATIONS



POWER RISER DIAGRAM

SCALE: NONE

KEYED NOTES

1. PROVIDE AND INSTALL A 25'-0" SOUTHERN PINE CLASS 4 WOOD POLE FOR THE INSTALLATION OF RISER. REFER TO "ELECTRICAL SITE PLAN" ON SHEET ES-01 FOR LOCATION OF POLE.
2. PROVIDE AND INSTALL A TRANSIENT VOLTAGE SURGE SUPPRESSION DEVICE. THE TVSS SHALL BE MANUFACTURED BY RAYCAP #120-2S-M3-3-06-A-H OR APPROVED EQUAL, NEMA 3R ENCLOSURE.
3. PROVIDE AND INSTALL A 2" RGS CONDUIT ON POLE RISER WITH CONDUCTORS. COORDINATE INSTALLATION WITH NTUA PRIOR TO PROCEEDING WITH INSTALLATION OF CONDUIT.
4. PROVIDE AND INSTALL A 100 AMP 120/240 VOLT METER SOCKET. REFER TO "ELECTRICAL SITE PLAN" ON SHEET ES-01 FOR LOCATION OF METER.
5. 3#2 THWN Cu IN 2" CONDUIT OR 3#1/0 THWN Al IN 2" CONDUIT.
6. REFER TO "GROUNDING SYSTEM DIAGRAM" ON THIS SHEET FOR ADDITIONAL INFORMATION.
7. PROVIDE AND INSTALL A 100 AMP, 250 VOLT, 2-POLE (PLUS SOLID NEUTRAL), GROUND LUG, SERVICE ENTRANCE RATED, FUSIBLE DISCONNECT SWITCH IN NEMA 3R ENCLOSURE. PROVIDE AND INSTALL 100 AMP RK5 FUSES.
8. 3#2 THWN Cu AND 1#8 THWN Cu GROUND IN 1 1/4" CONDUIT OR 3#1/0 THWN Al AND 1#6 THWN Al GROUND IN 1 1/2" CONDUIT.

PANEL / LOAD SCHEDULE - NEW PANELBOARD "A"

LOCATION: **Chlorination Building** | *VOLTAGE:* **120/240V-1Ph, 3W** | *AMPACITY:* **100 AMPERE** | *Main:* **100A/2P MCB**
FED FROM: **100A-2P Service Disconnect** | *ENCLOSURE:* **NEMA 4X** | *MOUNTING:* **SURFACE** | *AIC:* **10,000**

BKR SIZE	DESCRIPTION	DEMAND CODE	LOAD (VA)	Ckt #	LOAD (VA) PHASE A	LOAD (VA) PHASE B	Ckt #	LOAD (VA)	DEMAND CODE	DESCRIPTION	BKR SIZE
30A-2P	UNIT HEATER	LMECH	2000	1	4000		2	2000	MECH.	UNIT HEATER	30A-2P
		LMECH	2000	3		4000	4	2000	MECH.		
20A-1P	RECEPTACLES	REC.	900	5	1764		6	864	MECH.	CHLORINE PUMP	20A-1P
20A-1P	RECEPTACLES	REC.	900	7		1150	8	250	EQP.	VALVE CONTROL VC-22D	20A-1P
20A-1P	PLC PANEL	EQP.	500	9	700		10	200	EQP.	CHLORINE PANEL	20A-1P
20A-1P	CHLORINE SCALE	EQP.	100	11		200	12	100	EQP.	CHLORINE DETECTOR	20A-1P
20A-1P	LIGHTING AND EXHAUST FAN	LTG	788	13	988		14	200	EQP.	FLOW METER	20A-1P
20A-1P	SPARE			15			16			SPARE	20A-1P
20A-1P	SPARE			17			18			SPARE	20A-1P
20A-1P	SPARE			19			20			SPARE	20A-1P
20A-1P	SPARE			21			22			SPARE	20A-1P
20A-1P	SPARE			23			24			SPARE	20A-1P
20A-1P	SPARE			25			26			SPARE	20A-1P
20A-1P	SPARE			27			28			SPARE	20A-1P
20A-1P	SPARE			20			30			SPARE	20A-1P

Total Phase Loads (VA):	7,452	5,350
Total Phase Loads (Amps):	62.1	44.6
Total Connected Loads (kVA):	12.8	

Notes: 1. New Panelboard; 2. 30-Circuit, Lockable Enclosure; 3. Copper Neutral and Ground Bus Bars; 4. Door-in-Door Enclosure.

LOAD CALCULATIONS

Connected (kVA) by Type:			Estimated Demand (kVA) by Load Type:			
LTG	Lighting:	0.8	Lighting at 125% (kVA):	1.0	Total Estimated Demand (kVA):	14.0
REC	Receptacles:	1.8	Receptacles:	1.8	Amps at 240/120V-1 Phase (Amps):	58.3
			10kVA at 100% (kVA):	1.8	Panel Ampacity (Rating):	100
			Rest at 50% (kVA):	0.0		
EQP	Equipment:	1.4	Eqp at 100% (kVA):	1.4	Spare Capacity:	41.7%
LMECH	Largest Mech:	4.0	Largest at 125% (kVA):	5.0		
MECH	Mechanical:	4.9	Rest at 100% (kVA):	4.9		

DISCRETE & ANALOG I/O LIST - REFER TO PLANS & SPECIFICATIONS FOR SEQUENCE OF OPERATIONS

Site Name	I/O Name	Tag	Point	Type	Local	SCADA	Notes
Reach 10.2.1 Chlorination Building							
	Intrusion Alarm Control Room		I1	DI		Yes	
	Intrusion Alarm Chlorine Room		I2	DI		Yes	
	Smoke Detector		I3	DI		Yes	
	Chlorine Leak Warning		I4	DI		Yes	
	Chlorine Leak Alarm		I5	DI		Yes	
	Chlorine Detector Fault		I6	DI		Yes	
	Chlorine High Vacuum Alarm		I7	DI		Yes	
	Chlorine Low Vacuum Alarm		I8	DI		Yes	
	Chlorination System Alarm		I9	DI		Yes	
	Chlorine Booster Pump Running		I10	DI		Yes	
	Flow Valve Open		I11	DI		Yes	
	Low Temperature Alarm		I12	DI		Yes	
	Manual Flow Control Valve Override		I13	DO		YES	SCADA override tank level function and close control valve
			I14	DI			
			I15	DI			
			I16	DI			
	Flow Meter (Totalizer Pulses)		PI1	DI		Yes	SCADA shows totalized volume of water (gallons)
			PI2	DI			
	Flow Enable		DO1	DO	Yes		Interpose Relay From Distribution Tank Level
			DO2	DO			Interpose Relay
	Distribution Tank Level		AI1	AI		Yes	
	Flow Meter (Flow Rate)		AI2	AI		Yes	SCADA shows flow rate (gpm)
	Chlorine Bottle #1 Weight		AI3	AI		Yes	
	Chlorine Bottle #2 Weight		AI4	AI		Yes	

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Revision	Date	Description	By	Chk'd

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Client: The Navajo Nation
Location: Standing Rock, NM

POWER RISER DIAGRAM - CHLORINATION
NAVAJO GALLUP WATER SUPPLY PROJECT
BEACON BISTI N9 - REACH 10.2
McKINLEY COUNTY, NEW MEXICO
SECTION 1, T. 18 N., R. 16 W.

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22317PPSR

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TRG/rhp	TRG/rhp	TRG/tfr

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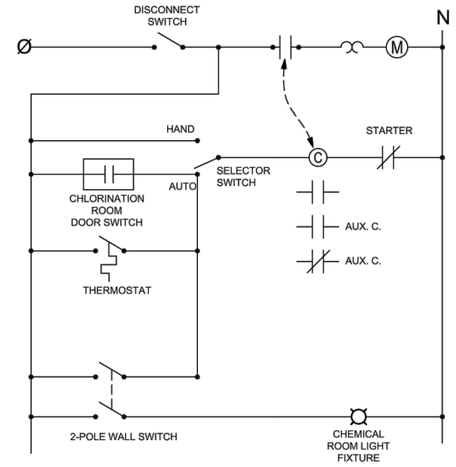
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Project No: #####

Sheet: E-52A

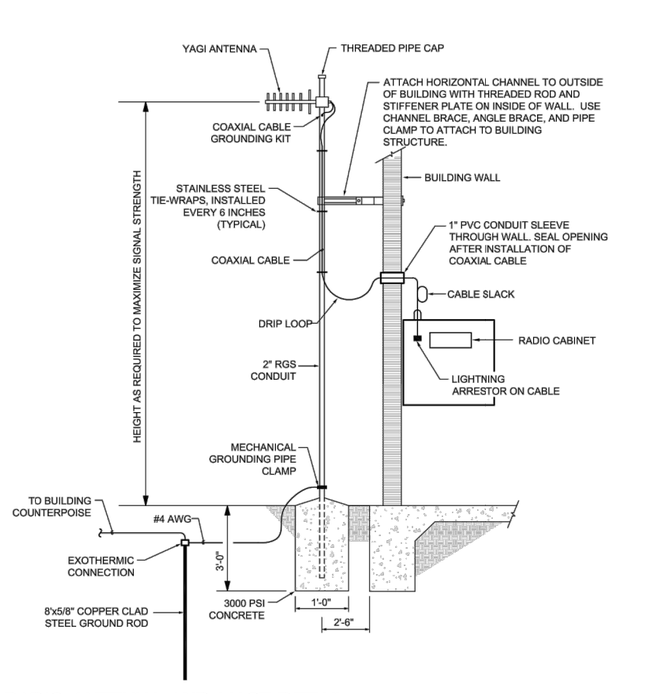


CHLORINATOR BUILDING EXHAUST FAN CONTROL DIAGRAM

NO SCALE

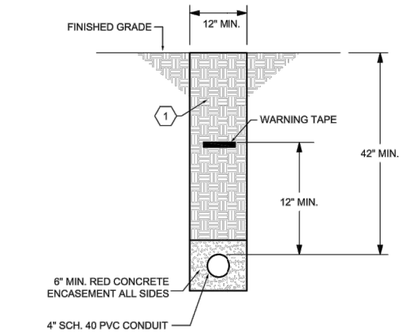
CHLORINATION ROOM EXHAUST FAN OPERATES AS FOLLOWS:
WITH THE STARTER SWITCH IN AUTO:

1. THE FAN WILL TURN ON WHEN THE DOOR IS OPEN VIA THE DOOR SWITCH.
2. WITH THE DOOR CLOSED THE FAN WILL TURN ON WHEN THE LIGHTING SWITCH IS SWITCHED ON.
3. WITH THE DOOR CLOSED AND LIGHTING SWITCH OFF, THE FAN WILL TURN ON BY THERMOSTAT.



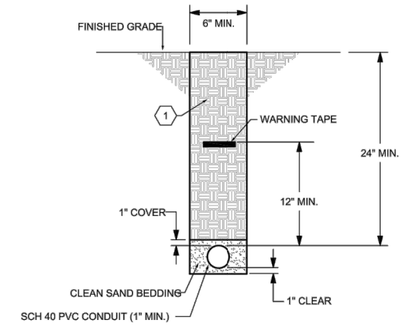
RADIO ANTENNA AND MAST DETAIL

SCALE: NONE



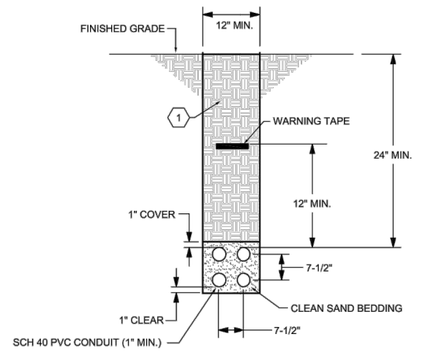
TYPICAL PRIMARY CONDUIT TRENCH DETAIL

SCALE: NONE



TYPICAL SINGLE CONDUIT TRENCH DETAIL

SCALE: NONE



TYPICAL MULTIPLE CONDUIT TRENCH DETAIL

SCALE: NONE

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Client: The Navajo Nation
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ELECTRICAL DETAILS
NAVAJO GALLUP WATER SUPPLY PROJECT
BEACON BISTI N9 - REACH 10.2
McKINLEY COUNTY, NEW MEXICO
SECTION 1, T. 18 N., R. 16 W.

NOT FOR CONSTRUCTION

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Vert: N/A

Project No: #####

Sheet: E-61A

ELECTRICAL SYMBOL LEGEND

SYMBOL	DESCRIPTION
	WALL OUTLET AND SURFACE MOUNTED FIXTURE
	LED OUTLET AND FIXTURE
	SINGLE POLE SWITCH, FLUSH MOUNTED 48" A.F.F.
	DUPLEX CONVENIENCE OUTLET, 18" A.F.F.
WP	WEATHERPROOF DUPLEX CONVENIENCE OUTLET, 18" A.F.F.
GFCI	DUPLEX CONVENIENCE OUTLET, GROUND FAULT CIRCUIT INTERRUPTER, 18" A.F.F.
J	JUNCTION BOX INSTALLED ABOVE LAY-IN CEILING WITH FLEXIBLE CONDUIT CONNECTION TO LAY-IN FIXTURES. MAXIMUM 4'-0" LENGTH OF CONDUIT, WITH REQUIRED CONDUCTORS ALONG WITH GREEN GROUND CONDUCTOR
J	JUNCTION BOX FLUSH IN WALL, HEIGHT AS INDICATED ON DRAWINGS, WITH CONNECTION TO EQUIPMENT
	CONCEALED BRANCH CIRCUIT WITH CONDUCTORS AS INDICATED. NEUTRAL, HOT, SWITCH LEG AND GROUND RESPECTIVELY
	BRANCH CIRCUIT OR CONDUIT INSTALLED UNDERGROUND OR UNDER FLOOR
P2-2,4	HOMERUN TO PANELBOARD WITH BRANCH CIRCUIT NUMBERS INDICATED
SV	SOLENOID VALVE
LS	LIMIT SWITCH
PT	PRESSURE TRANSMITTER
	FIRE ALARM SMOKE AND HEAT DETECTOR, PHOTOELECTRIC TYPE, 120V AUX CONTACTS
	MOTOR CONNECTION FOR FRACTIONAL HP MOTOR (1/3 HP OR LESS). PROVIDE THERMAL OVERLOAD SWITCH (WEATHERPROOF IF OUTSIDE) ADJACENT TO MOTOR UNLESS SWITCH IS SHOWN ELSEWHERE ON PLANS
#	MOTOR CONNECTION FOR MOTOR WITH HP INDICATED
	DISCONNECT SWITCH, POLES AND RATING AS INDICATED OR AS REQUIRED, NEMA 3R IF INSTALLED OUTSIDE
F	FUSED DISCONNECT SWITCH, FUSE, POLES AND RATING AS INDICATED OR AS REQUIRED, NEMA 3R IF INSTALLED OUTSIDE
	COMBINATION MAGNETIC MOTOR CONTROLLER/DISCONNECT SWITCH. SIZE, POLES, FUSES AND OVERLOADS PER MOTOR SERVED
	MAGNETIC MOTOR CONTROLLER, SIZE AND POLES PER MOTOR SERVED
T	TRANSFORMER, DRY TYPE, SIZE AS INDICATED
T	THERMOSTAT(M), 48" A.F.F.
	120V PANELBOARD, REFER TO PANEL SCHEDULE
	277V PANELBOARD, REFER TO PANEL SCHEDULE
	SPECIAL PURPOSE CABINET, AS INDICATED ON DRAWINGS
DC	INTRUSION ALARM DOOR CONTACT MAGNETIC
	NORMALLY OPEN CONTACT
	NORMALLY CLOSED CONTACT
C	CONTACTOR
OLS	MOTOR OVERLOADS
	RED PILOT LIGHT
	GREEN PILOT LIGHT
	TRANSFORMER
R	RELAY
	SWITCH
	FUSE(S)
	CIRCUIT BREAKER
PLC	PROGRAMMABLE LOGIC CONTROLLER
RTU	REMOTE TERMINAL UNIT
T	THERMOSTAT
WP	WEATHERPROOF (NEMA 3R)
NIC	NOT IN CONTRACT
NTS	NOT TO SCALE
A.F.F.	ABOVE FINISHED FLOOR
A.F.G.	ABOVE FINISHED GRADE

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

GENERAL NOTES

SPECIFICATIONS

G1) IF THERE IS A CONFLICT BETWEEN PLANS/SPECIFICATIONS AND MANUFACTURER'S RECOMMENDATIONS FOR ANY DEVICE, PART, OR MATERIAL USED IN THE PROJECT, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY IN WRITING THE ENGINEER FOR CLARIFICATION.

G2) THE CONTRACTOR SHALL FAMILIARIZE HIM/HERSELF WITH THE PLANS, AND THE SITE CONDITIONS PRIOR TO BID OPENING AND SHALL IMMEDIATELY NOTIFY THE ENGINEER IN WRITING OF ANY AMBIGUITIES, CONTRADICTIONS OR IRREGULARITIES IN THE PLANS.

G3) IF, DURING BIDDING OR CONSTRUCTION, THE CONTRACTOR IS IN DOUBT AS TO THE TRUE MEANING OF ANY PART OF THE PLANS, SPECIFICATIONS, OR OTHER CONTRACT DOCUMENTS, OR DISCREPANCIES IN OR POSSIBLE OMISSIONS FROM THE DRAWINGS OR SPECIFICATIONS, THEY SHALL IMMEDIATELY NOTIFY THE ENGINEER IN WRITING AND REQUEST AN INTERPRETATION OF CORRECTION THEREOF. DURING THE BIDDING PROCESS AN ADDENDUM (IF NEEDED) WILL BE ISSUED.

G3.1) THE CONTRACT, IF AWARDED, WILL BE ON THE BASIS OF MATERIAL AND EQUIPMENT SPECIFIED OR DESCRIBED IN THE BIDDING DOCUMENTS WITHOUT CONSIDERATION OF POSSIBLE SUBSTITUTE OR "OR EQUAL" ITEMS. WHEREVER A BRAND NAME IS SPECIFIED OR DESCRIBED IN THE BIDDING DOCUMENTS A SUBSTITUTE OR "OR EQUAL" ITEM OF MATERIAL OR EQUIPMENT MAY BE FURNISHED OR USED BY CONTRACTOR IF ACCEPTABLE TO ENGINEER, APPLICATION FOR SUCH ACCEPTANCE WILL NOT BE CONSIDERED BY ENGINEER UNTIL AFTER THE EFFECTIVE DATE OF AGREEMENT. THE PROCEDURE FOR SUBMISSION OF ANY SUCH APPLICATION BY CONTRACTOR AND CONSIDERATION BY ENGINEER IS SET FORTH IN THE GENERAL CONDITIONS.

EXISTING UTILITIES & OBSTACLES TO WORK

G4) THE CONTRACTOR IS RESPONSIBLE TO INSTALL ALL ITEMS DESCRIBED IN THESE PLANS IN A MANNER THAT PROTECTS THE EXISTING FACILITY. THE CONTRACTOR MUST CONTACT THE ENGINEER IMMEDIATELY IF HE IS UNABLE TO PERFORM THIS WORK WITHOUT DAMAGE TO THE EXISTING FACILITY. THE CONTRACTOR MUST FIELD VERIFY ALL EXISTING INFORMATION SHOWN ON THESE PLANS. DESIGN ELEMENTS OF THIS PROJECT WILL NOT CHANGE WITHOUT CHANGE ORDER UNLESS THE CONTRACTOR NOTIFIES THE ENGINEER IN A TIMELY MANNER REGARDING ITEMS DESCRIBED IN THIS NOTE. CHANGES IN ALIGNMENT CAUSED BY UNKNOWN OR UNANTICIPATED SITE CONDITIONS SHALL BE ACCOUNTED FOR BY THE APPROPRIATE UNIT PRICES, AS RECOMMENDED BY THE ENGINEER AND APPROVED BY THE OWNER.

G5) THE EXISTENCE, CONDITION AND LOCATION OF ANY UNDERGROUND UTILITIES OR STRUCTURES SHOWN IN THESE PLANS WAS OBTAINED BY A CAREFUL SEARCH OF AVAILABLE RECORDS. TO THE BEST OF THE ENGINEERS KNOWLEDGE, THERE ARE NO EXISTING UNDERGROUND UTILITIES EXCEPT THOSE SHOWN ON THESE PLANS. THE CONTRACTOR IS REQUIRED TO TAKE ALL PRECAUTIONARY MEASURES TO PROTECT THE UTILITIES SHOWN, AND ANY OTHER LINES OR STRUCTURES NOT SHOWN ON THESE PLANS, AND IS RESPONSIBLE FOR THEIR LOCATING, PROTECTION OF, OR ANY DAMAGE TO THESE LINES OR STRUCTURES. THIS DOES NOT RELIEVE THE CONTRACTOR FROM HIS RESPONSIBILITY TO NOTIFY ALL UTILITY COMPANIES AND OBTAIN LINE SPOTS.

G6) THE FOLLOWING IS A LIST OF POSSIBLE OBSTRUCTIONS AND SHALL NOT BE CONSIDERED A COMPLETE LIST OF POSSIBLE OBSTRUCTIONS: EXISTING UTILITIES, STRUCTURE, GEOTECHNICAL FEATURES, ALL CONDUIT, CABLES, PIPES, WATERLINES, SEWER LINES, GAS LINES, POWER LINES, TELEPHONE AND TELEGRAPH LINES, TREES, MONUMENTS, TRAFFIC CONTROL DEVICES AND OTHER STRUCTURES, BOTH BELOW AND ABOVE GROUND.

G7) CONTRACTOR SHALL BE HELD RESPONSIBLE FOR COSTS OF REPAIR OF ANY AND ALL DAMAGE TO ANY UTILITY (WHICH IS PREVIOUSLY KNOWN AND DISCLOSED TO HIM BY THE UTILITY OR SHOWN ON THESE PLANS) AS MAY BE CAUSED BY HIS OPERATIONS.

G8) FIVE (5) WORKING DAYS PRIOR TO ANY EXCAVATION, CONTRACTOR MUST CONTACT NEW MEXICO ONE-CALL SYSTEM, INC. (505) 260-1990, FOR LOCATION OF EXISTING UTILITIES.

G9) CONTRACTOR SHALL GIVE ALL PUBLIC AND PRIVATE UTILITY COMPANIES NOTICE AS SOON AS POSSIBLE, IN NO EVENT LESS THAN FORTY EIGHT (48) HOURS, FOR ANY WORK THAT IS UNDERSTOOD TO INTERFERE WITH THE SERVICE OF ANY EXISTING PUBLIC OR PRIVATE UTILITY. IF SUCH PUBLIC OR PRIVATE UTILITY DOES NOT COOPERATE FOR THE PROTECTION OF ITS SERVICES, CONTRACTOR SHALL NOTIFY ENGINEER.

G10) CONTRACTOR SHALL IMMEDIATELY REPORT ANY DAMAGES TO PUBLIC OR PRIVATE PROPERTY TO THE OWNER OF THE PROPERTY INVOLVED AND TO THE ENGINEER. CONTRACTOR SHALL REPAIR OR RESTORE AT HIS OWN EXPENSE ANY DAMAGE TO PUBLIC OR PRIVATE PROPERTY, FOR WHICH THEY ARE DIRECTLY OR INDIRECTLY RESPONSIBLE, TO A CONDITION EQUAL TO THAT EXISTING BEFORE DAMAGE. CONTRACTOR SHALL PROMPTLY NOTIFY HIS INSURANCE CARRIER OF SUCH DAMAGE. IF CONTRACTOR FAILS TO GIVE SUCH NOTICE TO HIS INSURANCE CARRIER OR REFUSES TO EFFECT SUCH REPAIRS OR RESTORATION UPON RECEIPT OF NOTICE, THE ENGINEER MAY CAUSE SUCH REPAIRS OR RESTORATION AND DEDUCT THE COST THEREOF FROM MONEYS DUE, OR WHICH MAY BECOME DUE, TO THE CONTRACTOR.

G11) CONTRACTOR IS RESPONSIBLE FOR RECORDING EXISTING CONDITIONS IN ACCORDANCE WITH THE SUPPLEMENTARY CONDITIONS OF THE CONTRACT BEFORE CONSTRUCTION BEGINS. THE RECORD OF EXISTING CONDITIONS SHALL BE USED AS THE "EQUAL CONDITION BEFORE DAMAGE" IN THE EVENT OF DAMAGE TO PUBLIC OR PRIVATE PROPERTY. CONTRACTOR FAILURE TO RECORD EXISTING CONDITIONS WILL MAKE THE OWNERS CLAIM OF "EQUAL CONDITION BEFORE DAMAGE" THE STANDARD THE CONTRACTOR SHALL BE RESPONSIBLE FOR MEETING AND THE ENGINEER WILL BE IN THE POSITION OF NOT BEING ABLE TO SUPPORT THE CONTRACTOR IN THE MEDIATION OF ANY DISPUTE.

G12) THE CONTRACTOR IS RESPONSIBLE FOR FIELD VERIFICATION OF LOCATION OF ALL EXISTING UTILITIES..

SITE CONDITIONS

G13) CONTRACTOR SHALL MAINTAIN ACCESS TO ALL FACILITIES ADJACENT TO THE CONSTRUCTION AREA.

G14) THE CONTRACTOR SHALL USE WATERING EQUIPMENT FOR DUST POLLUTION ABATEMENT AS REQUIRED OR AS DIRECTED BY THE ENGINEER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING AND SUPPLYING WATER. THIS WORK AND MATERIAL SHALL BE CONSIDERED INCIDENTAL TO CONSTRUCTION.

G15) EPA STORM WATER DISCHARGE REGULATIONS. THE CONTRACTOR IS RESPONSIBLE FOR COMPLIANCE TO APPLICABLE PORTIONS OF THE EPA STORM WATER DISCHARGE REGULATIONS.

SITE DESIGN

G16) SUBGRADE. ALL SUBGRADE AND TRENCH BACKFILL SHALL BE COMPACTED TO 95 % OF STANDARD PROCTOR. ALL SUBGRADE AND BACKFILL SHALL BE COMPACTED IN MAXIMUM 8" LOOSE LIFTS. MOISTURE CONTENT AT THE TIME OF COMPACTION SHALL NOT EXCEED OPTIMUM OR BE LESS THAN 5 PERCENTAGE POINTS BELOW OPTIMUM. DRIVEWAYS, APRONS, FILLETS, CURB AND GUTTER, AND OTHER CONCRETE PAVEMENT SHALL BE PLACED ON 6" OF COMPACTED SUBGRADE.

G17) RESTORE SURFACE AT TRENCH TO EXISTING CONDITIONS.

COMMUNICATION

G18) CONTRACTOR SHALL KEEP THE OWNER AND THE ENGINEER UPDATED WEEKLY ON THE CONSTRUCTION SCHEDULE AND/OR PHASE SCHEDULE, AND PROGRESS TO DATE.

STAGING STORAGE & DEBRIS DISPOSAL

G19) DEBRIS GENERATED BY CONSTRUCTION ACTIVITIES SHALL BE DISPOSED OF AT A PERMITTED LANDFILL OR OTHER DULY CERTIFIED REFUSE FACILITY. THE DISPOSAL OF DEBRIS IS NOT A PAY ITEM.

RECORD DRAWINGS

G20) THE CONTRACTOR SHALL PROVIDE A RECORD SKETCH ON THESE PLANS FOR THE AS-CONSTRUCTED CONDITIONS.

PHASE AND SCHEDULE

G21) CONTRACTOR SHALL PHASE AND SCHEDULE WORK IN SUCH A WAY AS TO PROVIDE MINIMAL POWER OUTAGES AT THE FACILITY. A PROJECT SCHEDULE SHALL BE SUBMITTED TO THE OWNER FOR REVIEW PRIOR TO ISSUANCE OF NOTICE-TO-PROCEED. CHANGES IN SCHEDULE SHALL BE PRESENTED TO OWNER AND ENGINEER AT LEAST 7 DAYS PRIOR TO PROPOSED IMPLEMENTATION. THESE SCHEDULES, SCHEMATICS AND DIAGRAMS SHALL BE UPDATED WEEKLY AS THE WORK PROGRESSES. MOST CHANGE OVER SHALL BE DONE ON WEEKENDS OR AFTER HOURS.

SUBMITTALS

G22) CONTRACTOR SHALL PROVIDE SUBMITTALS FOR ALL EQUIPMENT, MATERIALS, PROCESSES AND SCHEDULES AND AS REQUESTED BY ENGINEER.

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Client: The Navajo Nation
Location: Standing Rock, NM

ELECTRICAL LEGEND AND PROJECT NOTES
NAVAJO GALLUP WATER SUPPLY PROJECT
BEACON BISTI N9 - REACH 10.2
McKINLEY COUNTY, NEW MEXICO
SECTION 1, T. 18 N., R. 16 W.

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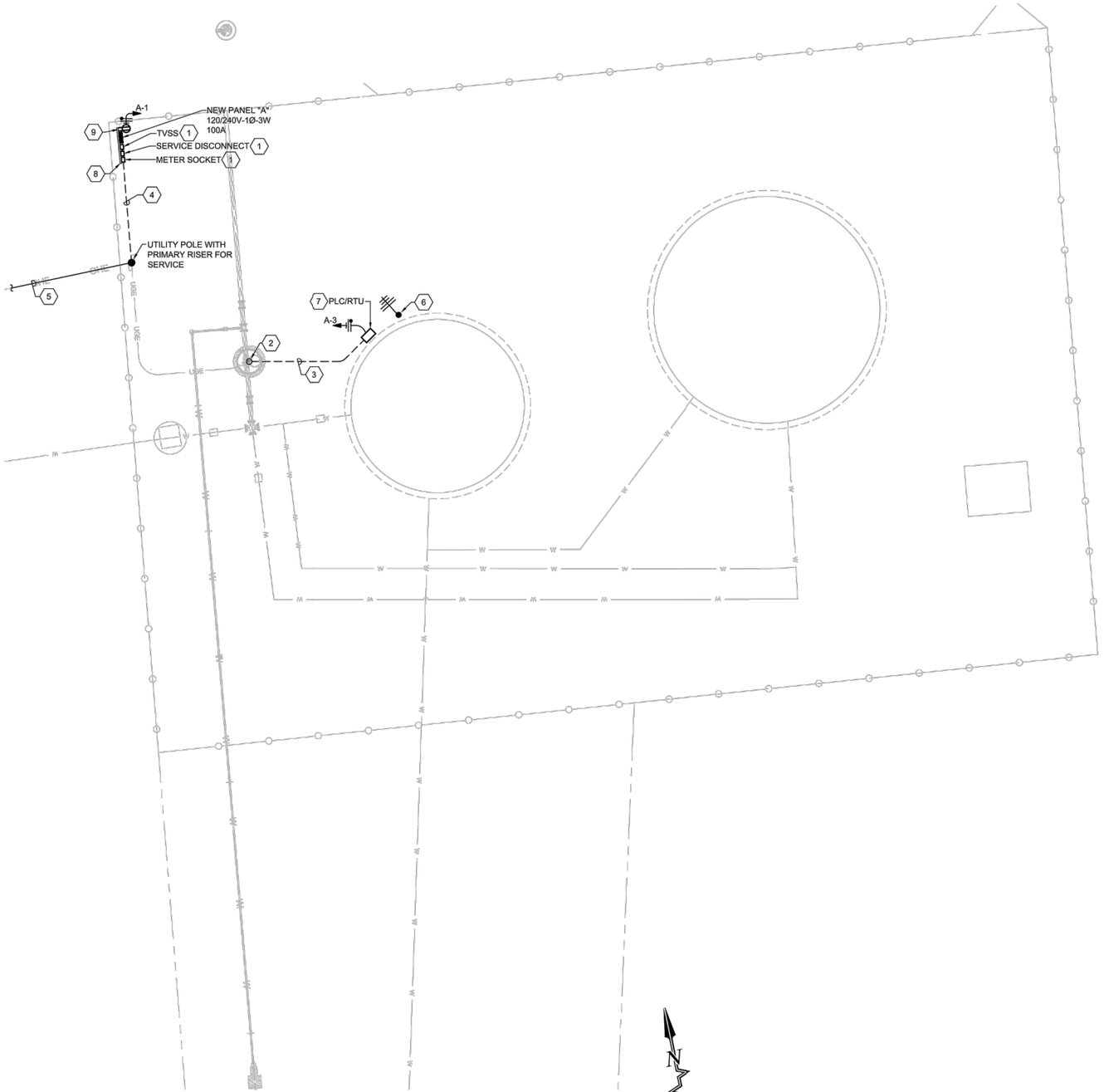
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Sheet: E-01B



ELECTRICAL SITE PLAN

GENERAL NOTES

A. ALL CONDUITS SHOWN DASHED SHALL BE BURIED A MINIMUM OF 36" BELOW FINISHED GRADE. ALL CONDUITS THAT COME IN CONTACT WITH THE GROUND SHALL BE PVC OR DOUBLE LAPPED WRAPPED WITH SCOTCHWRAP-51.

B. REFER TO SHEET E-01 FOR "ELECTRICAL SYMBOL LEGEND" AND "GENERAL NOTES".

C. REFER TO SHEET E-51 FOR "POWER RISER DIAGRAM - SURGE TANK" AND SHEET E-52 FOR "POWER RISER DIAGRAM - PUMPING BUILDING".

D. FIELD COORDINATE ALL EQUIPMENT WITH OWNER PRIOR TO INSTALLATION.

E. ALL UTILITY EQUIPMENT SHALL BE FULLY COORDINATED WITH NTUA PRIOR TO INSTALLATION.

KEYED NOTES ⬡

1. REFER TO "POWER RISER DIAGRAM - TANKS 2 AND 3" ON SHEET E-51 FOR SERVICE EQUIPMENT SIZES AND WIRING.
2. PROVIDE AND INSTALL NEW PRESSURE TRANSDUCER IN VAULT. PRESSURE TRANSDUCER TO BE 4-20mA, 4 WIRE (ANALOG POSITIVE, ANALOG NEGATIVE, POWER POSITIVE AND POWER NEGATIVE) AND SEND SIGNAL TO SCADA SYSTEM. PRESSURE TRANSDUCER TO CONTROL UPSTREAM PUMPING BUILDING. COORDINATE EXACT LOCATION IN FIELD. PROGRAM PLC AS REQUIRED.
3. 3/4" CONDUIT BURIED 36" BELOW FINISHED GRADE WITH RED WARNING TAPE BURIED 12" ABOVE FINISHED GRADE. CONDUIT TO HAVE 4#14 THWN Cu (ANALOG POSITIVE, ANALOG NEGATIVE, POWER POSITIVE AND POWER NEGATIVE). MAKE ALL REQUIRED CONNECTIONS FOR A COMPLETE AND OPERATIONAL SYSTEM.
4. SECONDARY FEEDER TO ELECTRICAL EQUIPMENT RACK BURIED 36" BELOW FINISHED GRADE (OR AS REQUIRED BY NTUA), WITH RED WARNING TAPE BURIED 12" ABOVE CONDUIT. REFER TO "POWER RISER DIAGRAM - TANKS 2 AND 3" ON SHEET E-51 FOR ADDITIONAL INFORMATION.
5. NEW OVERHEAD UTILITY CONDUCTORS. COORDINATE ALL REQUIREMENTS WITH NTUA.
6. PROVIDE AND INSTALL NEW YAGI ANTENNA PER RADIO ANTENNA AND MAST DETAIL ON SHEET E-61. ORIENT ANTENNA IN ORDER TO MAXIMIZE SIGNAL STRENGTH.
7. PLC/RTU CABINET, NEMA 4X ENCLOSURE. THE CONTRACTOR SHALL COORDINATE THE INSTALLATION OF EQUIPMENT WITH THE GENERAL PRIOR TO THE EXTENSION OF CIRCUIT AND CONTROLS. TERMINATE POWER AND CONTROL CABLING TO CONTROLLER PER EQUIPMENT MANUFACTURER'S RECOMMENDATION. REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
8. PROVIDE AND INSTALL UNISTRUT RACK FOR MOUNTING OF ELECTRICAL GEAR. RACK SHALL BE SIZED IN ORDER TO ACCOMODATE ALL EQUIPMENT BEING PROVIDED. REFER TO "ELECTRICAL RACK DETAIL ON SHEET E-61 FOR ADDITIONAL INFORMATION.
9. PROVIDE AND INSTALL NEW GFCI TYPE NEMA 5-20R RECEPTACLE IN WEATHERPROOF WHILE IN USE ENCLOSURE. RECEPTACLE SHALL BE MOUNTED ON UNISTRUT RACK.

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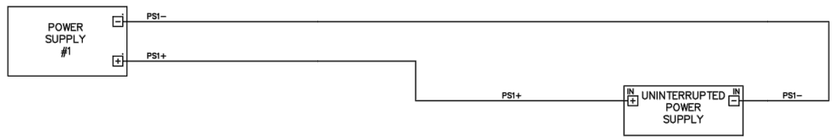
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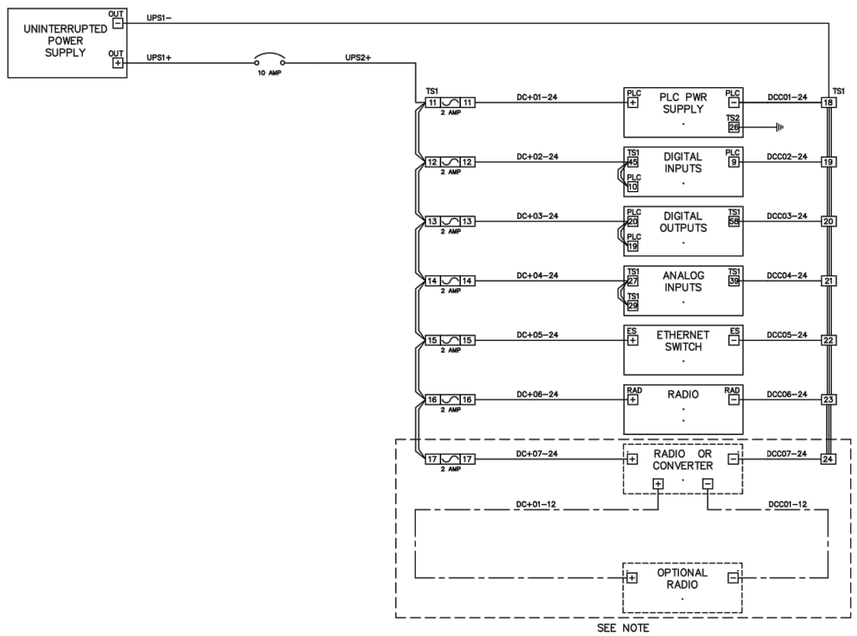
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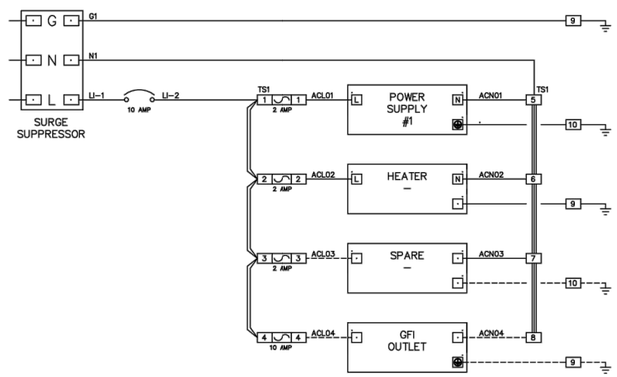
24VDC DISTRIBUTION



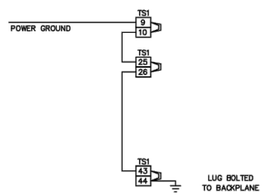
24VDC DISTRIBUTION (UPS)



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:

DR'N: CHK'D:

APVD:

TITLE: AC TANK CONTROL PANEL
POWER DISTRIBUTION

W.O.#

SHEET 4 OF 6

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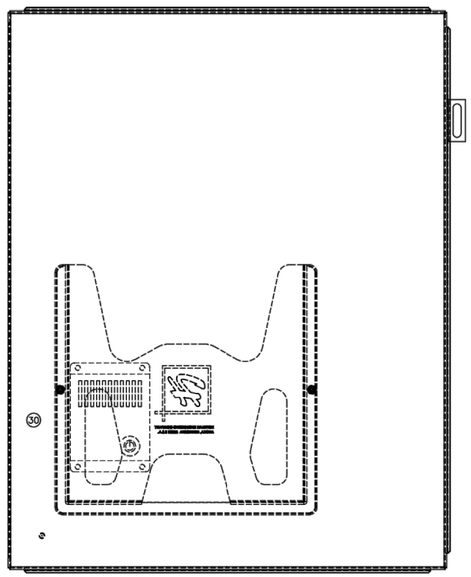
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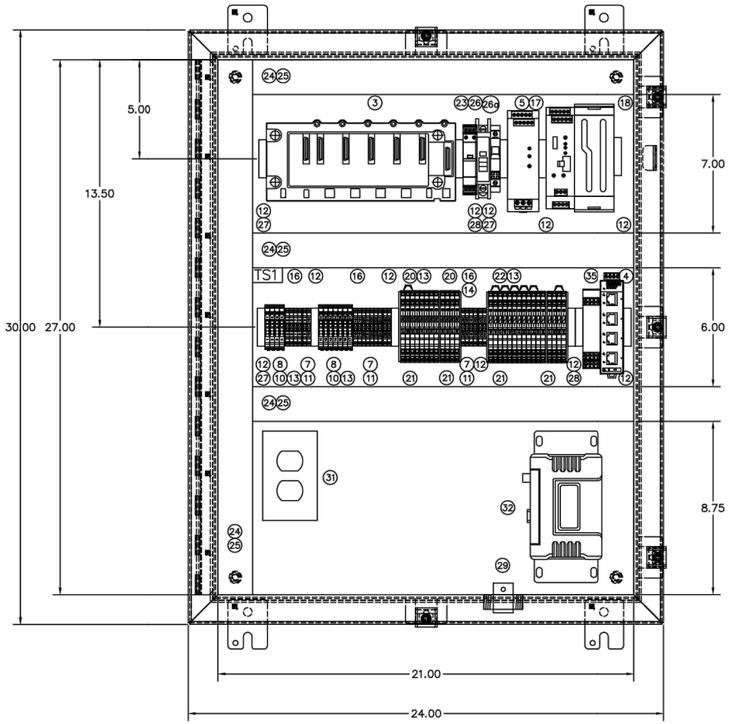
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BILL OF MATERIALS

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 STX	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-12-24DC/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
DATED:
DR'N. CKD.
APVD.

REVISIONS	BY	DATE
.	.	.

TITLE: AC TANK CONTROL PANEL
BACKPLANE

W.O.#

SHEET 5 OF 6

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www.soudermiller.com

Client: The Navajo Nation
Location: Standing Rock, NM

NTUA DIAGRAM
NAVAJO GALLUP WATER SUPPLY PROJECT
BEACON BISTI N9 - REACH 10.2
McKINLEY COUNTY, NEW MEXICO
SECTION 1, T. 18 N., R. 16 W.

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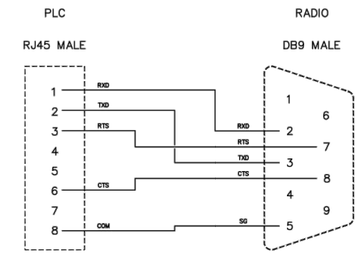
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A CABLE DIAGRAM: PLC TO RADIO

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NAVAJO TRIBAL UTILITY AUTHORITY

SCALE: NONE

DATE: .

DRN. . CHD. .

APVD. .

REVISIONS | BY | DATE

TITLE: AC TANK CONTROL PANEL
CABLE PINOUT

W.O.#

SHEET 6 OF 6

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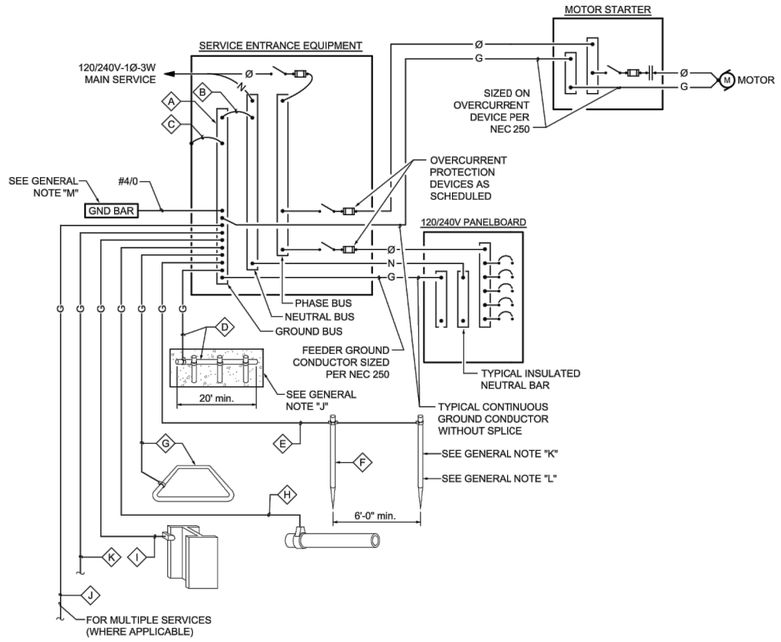
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GROUNDING SYSTEM DIAGRAM 120/240V-1Ø

NOT TO SCALE

GROUNDING SYSTEM GENERAL NOTES 2018

A. THE GROUNDING ELECTRODE SYSTEM SHALL CONSIST OF ITEMS Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ Ⓕ AND Ⓖ, WHERE APPLICABLE.

B. ITEMS Ⓗ Ⓘ AND Ⓙ MUST BE BONDED TOGETHER AND TO THE GROUNDING ELECTRODE SYSTEM WHEN THEY ARE PRESENT.

C. ITEM Ⓓ, CONCRETE ENCASED ELECTRODE (UFER) SHALL HAVE UFER SUPPORT CONSISTING OF 5/8" x 10' COPPER GROUND ROD CUT INTO 2' SECTIONS AND DRIVEN FOR SUPPORT OF UFER CONDUCTOR. ONLY COPPER TO COPPER CONNECTIONS ARE ACCEPTABLE. DO NOT USE RE-BAR FOR UFER SUPPORT. (THIS IS TO AVOID THE HARMFUL EFFECTS OF DISSIMILAR METALS IN CONTACT.) A U.L. LISTED COPPER TO RE-BAR CLAMP (SUCH AS GRAVES "JONES BOND" SYSTEM) IS AN APPROVED ALTERNATIVE.

D. THIS DETAIL IS PROVIDED IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE, ARTICLE 250, PERTAINING TO THE ``GROUNDING ELECTRODE SYSTEM".

E. ALL SPLICING AND UNDERGROUND CONNECTIONS SHALL BE ACCOMPLISHED VIA EXOTHERMIC WELD (CAD-WELD) ONLY.

F. ALL CONDUCTOR SIZING INDICATED ON THE GROUNDING SCHEDULE ARE FOR COPPER CONDUCTORS. ALUMINUM IS NOT PERMITTED.

G. ANY VARIANCES FROM THIS DIAGRAM AND ASSOCIATED SCHEDULE AND NOTES MUST BE REQUESTED AND APPROVED IN WRITING PRIOR TO INSTALLATION.

H. ALL INSTALLATIONS SHALL COMPLY WITH THE LATEST ADOPTED EDITION OF N.E.C. ARTICLE 250 (ALL SUBPARAGRAPHS) AND ALL STATE AND LOCAL REQUIREMENTS.

I. THE GROUNDING SYSTEM SHALL PROVIDE LESS THAN (4) FOUR OHMS RESISTANCE TO GROUND AT THE SERVICE CONNECTION. THE RESULTS SHALL BE VERIFIED BY AN INDEPENDENT TESTING AGENCY VIA GROUND TEST (FALL-OF-POTENTIAL) AND SUBMITTED TO ELECTRICAL ENGINEER UPON COMPLETION OF PROJECT.

J. IF A 20'-0" LONG (MINIMUM) CONCRETE ENCASED ELECTRODE IS NOT AVAILABLE, CONTRACTOR MAY INSTALL A 20'-0" (MINIMUM) UFER GROUND 30" BELOW GRADE WITH AT LEAST TWO GROUND RODS (ONE AT EACH END).

K. PROVIDE SECOND GROUND ROD AT LEAST 6'-0" FROM INITIAL GROUND ROD.

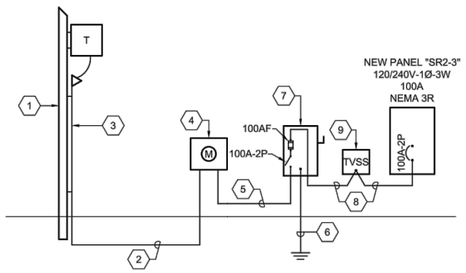
L. WHEN INDICATED ON DRAWINGS, PROVIDE AND INSTALL HORIZONTAL CHEMICAL GROUND ELECTRODE KIT. 10' COPPER ELECTRODE LENGTH, FACTORY ATTACHED 6' #4/0 COPPER PIGTAIL, AND HIGH DENSITY POLYETHYLENE INSPECTION WELL & COVER. ERICO #ECRH1020J6U OR APPROVED EQUAL. CONTRACTOR SHALL USE MANUFACTURER RECOMMENDED ELECTROLYTIC SALTS, BENTONITE CLAY BACKFILL MATERIAL, AND GROUND ENHANCEMENT MATERIAL (GEM). CONTRACTOR SHALL INSTALL PER MANUFACTURERS RECOMMENDATIONS. CONTRACTOR SHALL MAINTAIN 6'-0" SEPARATION (MINIMUM) BETWEEN GROUNDING ELECTRODES. INSPECTION WELL INSTALLED FLUSH WITH FINAL GRADE.

M. PROVIDE AND INSTALL 1/4" X 4" X 18" COPPER MAIN GROUNDING BUS BAR WITH BRACKETS AND INSULATORS. CONTRACTOR SHALL COORDINATE PRE-DRILLED (12)-1/4" HOLES REQUIREMENTS WITH PNM (OWNER). ERICO OR APPROVED EQUAL. EXTEND 1#4/0 CU GROUNDING CONDUCTOR TO MAIN GROUND. COORDINATE EXACT LOCATION AND ROUTING IN THE FIELD. CONTRACTOR SHALL MAKE ALL FINAL TERMINATIONS AS REQUIRED.

GROUNDING SCHEDULE

CODE REFERENCE / AMPACITY	Ⓐ FACTORY INSTALLED GROUND BUS BAR	Ⓑ INTEGRATED BUS BAR MAIN BOND JUMPER	Ⓒ INTEGRATED BUS BAR CASE BOND JUMPER	Ⓓ CONCRETE ENCASED ELECTRODE (UFER)	Ⓔ GROUNDING ELECTRODE CONDUCTOR TO ROD, PIPE OR PLATE	Ⓕ CU or CU-CLAD STEEL GROUND ROD	Ⓖ COPPER GROUND RING CONDUCTOR	Ⓗ METALLIC PIPING BONDING CONDUCTOR	Ⓘ BUILDING STEEL BONDING CONDUCTOR	Ⓙ MULTIPLE SERVICE BONDING CONDUCTOR	Ⓚ TELEPHONE SYSTEM GROUNDING CONDUCTOR
		N.E.C. 250.102(C)	N.E.C. 250.102(C)	N.E.C. 250.52(A)(3) 250.66(B)	N.E.C. 250.52(A)(5) 250.52(A)(7) 250.66(A)	N.E.C. 250.52(A)(5)	N.E.C. 250.52(A)(4) 250.66(C)	N.E.C. 250.52(A)(1) 250.66	N.E.C. 250.50(A)(2) 250.66	N.E.C. 250.66	-
200 AMP		#4	#4	#4	#6	5/8"x8'	#2	#4	#4	#4	#6
225 AMP		#2	#2	#4	#6	5/8"x8'	#2	#2	#2	#2	#6
400 AMP		#1/0	#1/0	#4	#6	5/8"x8'	#1/0	#1/0	#1/0	#1/0	#6
600 AMP		#2/0	#2/0	#4	#6	5/8"x8'	#2/0	#2/0	#2/0	#2/0	#6

SHALL BE SIZED TO ACCOMMODATE ALL GROUND WIRE LUGS AS INDICATED ON GROUNDING DIAGRAM AND/OR REFERENCED ELSEWHERE ON PLANS OR SPECIFICATIONS



POWER RISER DIAGRAM - TANKS 2 AND 3

PANEL / LOAD SCHEDULE - NEW PANELBOARD "A"

LOCATION: Electrical Gear Rack | VOLTAGE: 120/240V-1Ph, 3W | AMPACITY: 100 AMPERE | Main: 100A/2P MCB
FED FROM: 100A-2P Service Disconnect | ENCLOSURE: NEMA 3R | MOUNTING: SURFACE | AIC: 10,000

BKR SIZE	DESCRIPTION	DEMAND CODE	LOAD (VA)	Ckt #	LOAD (VA) PHASE A	LOAD (VA) PHASE B	Ckt #	LOAD (VA)	DEMAND CODE	DESCRIPTION	BKR SIZE
20A-1P	RECEPTACLE	REC	1500	1	1500		2			SPARE	20A-1P
20A-1P	PLC	EQP	200	3		200	4			SPARE	20A-1P
20A-1P	SPARE			5			6			SPARE	20A-1P
20A-1P	SPARE			7			8			SPARE	20A-1P
20A-1P	SPARE			9			10			SPARE	20A-1P
20A-1P	SPARE			11			12			SPARE	20A-1P
20A-1P	SPARE			13			14			SPARE	20A-1P
20A-1P	SPARE			15			16			SPARE	20A-1P
20A-1P	SPARE			17			18			SPARE	20A-1P
20A-1P	SPARE			19			20			SPARE	20A-1P
20A-1P	SPARE			21			22			SPARE	20A-1P
20A-1P	SPARE			23			24			SPARE	20A-1P
20A-1P	SPARE			25			26			SPARE	20A-1P
20A-1P	SPARE			27			28			SPARE	20A-1P
20A-1P	SPARE			20			30			SPARE	20A-1P

Total Phase Loads (VA): 1,500 | 200
Total Phase Loads (Amps): 12.5 | 1.7
Total Connected Loads (kVA): 1.7

Notes:
1. New Panelboard
2. 30-Circuit, Lockable Enclosure
3. Copper Neutral and Ground Bus Bars
4. Door-in-Door Enclosure.

LOAD CALCULATIONS

Connected (kVA) by Type:			Estimated Demand (kVA) by Load Type:			
LTG	Lighting:		Lighting at 125% (kVA):		Total Estimated Demand (kVA):	1.7
REC	Receptacles:	1.5	Receptacles:	1.5	Amps at 240/120V-1 Phase (Amps):	7.1
			10kVA at 100% (kVA):	1.5	Panel Ampacity (Rating):	100
			Rest at 50% (kVA):	0.0		
EQP	Equipment:	0.2	Eqp at 100% (kVA):	0.2	Spare Capacity:	92.9%
LMECH	Largest Mech:		Largest at 125% (kVA):			
MECH	Mechanical:		Rest at 100% (kVA):			

KEYED NOTES

1. PROVIDE AND INSTALL A 25'-0" SOUTHERN PINE CLASS 4 WOOD POLE FOR THE INSTALLATION OF RISER.
2. 3" CONDUIT BURIED A MINIMUM OF 36" (OR PER LOCAL UTILITY REQUIREMENTS) WITH RED WARNING TAPE BURIED 12" ABOVE CONDUIT FOR PRIMARY CONDUCTORS. COORDINATE EXACT REQUIREMENTS WITH NTUA PRIOR TO WORK BEING PERFORMED. PROVIDE AND INSTALL PULLTAPE IN CONDUIT.
3. PROVIDE A 3" RGS CONDUIT ON POLE RISER WITH CONDUCTORS. COORDINATE INSTALLATION WITH UTILITY COMPANY PRIOR TO PROCEEDING WITH INSTALLATION OF CONDUITS
4. PROVIDE AND INSTALL A 120/240 VOLT METER SOCKET PER THE LOCAL UTILITY COMPANY REQUIREMENTS. REFER TO "ELECTRICAL SITE PLAN" ON SHEET ES-01 FOR LOCATION.
5. 3#2 THWN Cu IN 1 1/4" CONDUIT OR 3#1/0 XHHW Al IN 1 1/2" CONDUIT. CONDUIT SIZE IS MINIMUM OR PER LOCAL UTILITY REQUIREMENTS.
6. REFER TO "GROUNDING SYSTEM DIAGRAM - 277/480 VOLT SYSTEM" ON THIS SHEET FOR ADDITIONAL INFORMATION.
7. PROVIDE AND INSTALL A FUSIBLE DISCONNECT SWITCH, 100 AMPS, 600 VOLTS, 3 POLE, SOLID NEUTRAL AND GROUND LUG, NEMA 3R ENCLOSURE. FUSE AT 100 AMPS. PROVIDE A MINIMUM WORKING CLEARANCE OF 3'-0" WIDE IN FRONT OF DISCONNECT SWITCH PER NEC.
8. 3#2 THWN Cu AND 1#8 THWN Cu GROUND IN 1 1/4" CONDUIT OR 3#1/0 XHHW Al AND 1#6 XHHW Al GROUND IN 1 1/2" CONDUIT.
9. PROVIDE AND INSTALL A TRANSIENT VOLTAGE SURGE SUPPRESSION DEVICE. THE TVSS SHALL BE MANUFACTURED BY RAYCAP #277-3Y-M3-4-06-C-H OR APPROVED EQUAL, NEMA 3R ENCLOSURE.

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POWER RISER DIAGRAM AND DETAILS
NAVAJO GALLUP WATER SUPPLY PROJECT
BEACON BISTI N9 - REACH 10.2
McKINLEY COUNTY, NEW MEXICO
SECTION 1, T. 18 N., R. 16 W.

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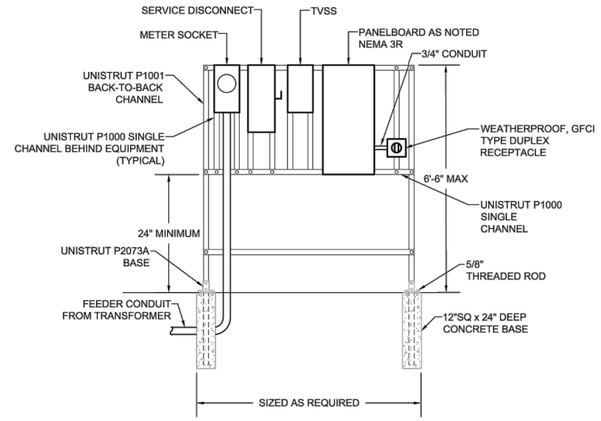
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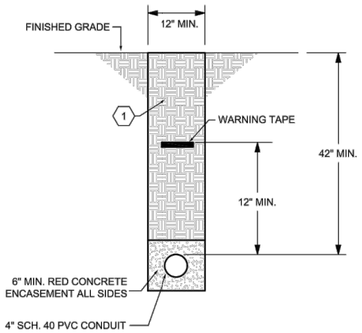
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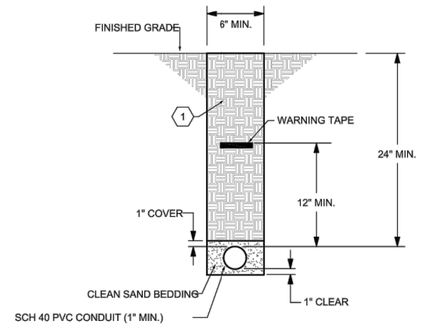
ELECTRICAL EQUIPMENT RACK DETAIL

SCALE: NONE



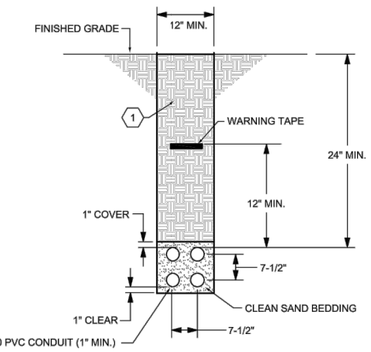
TYPICAL PRIMARY CONDUIT TRENCH DETAIL

SCALE: NONE



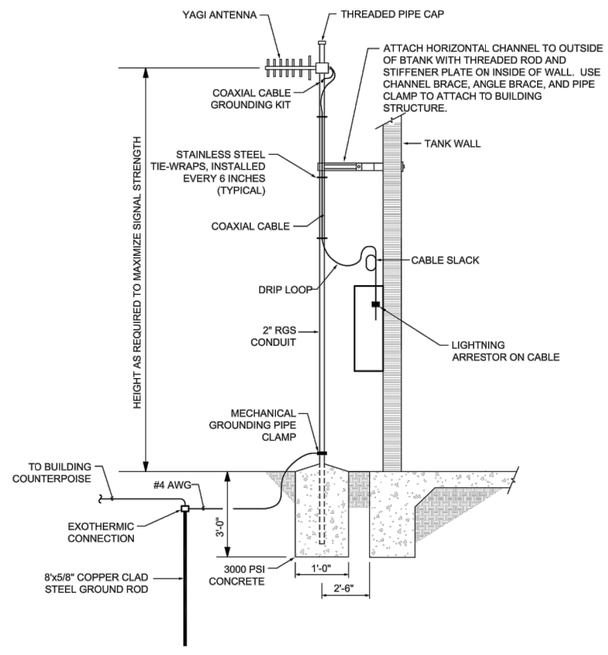
TYPICAL SINGLE CONDUIT TRENCH DETAIL

SCALE: NONE



TYPICAL MULTIPLE CONDUIT TRENCH DETAIL

SCALE: NONE



RADIO ANTENNA AND MAST DETAIL

SCALE: NONE

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