

NAVAJO GALLUP WATER SUPPLY PROJECT

BEACON BISTI N9

REACH 10.1

90% DRAFT
2/17/22

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.

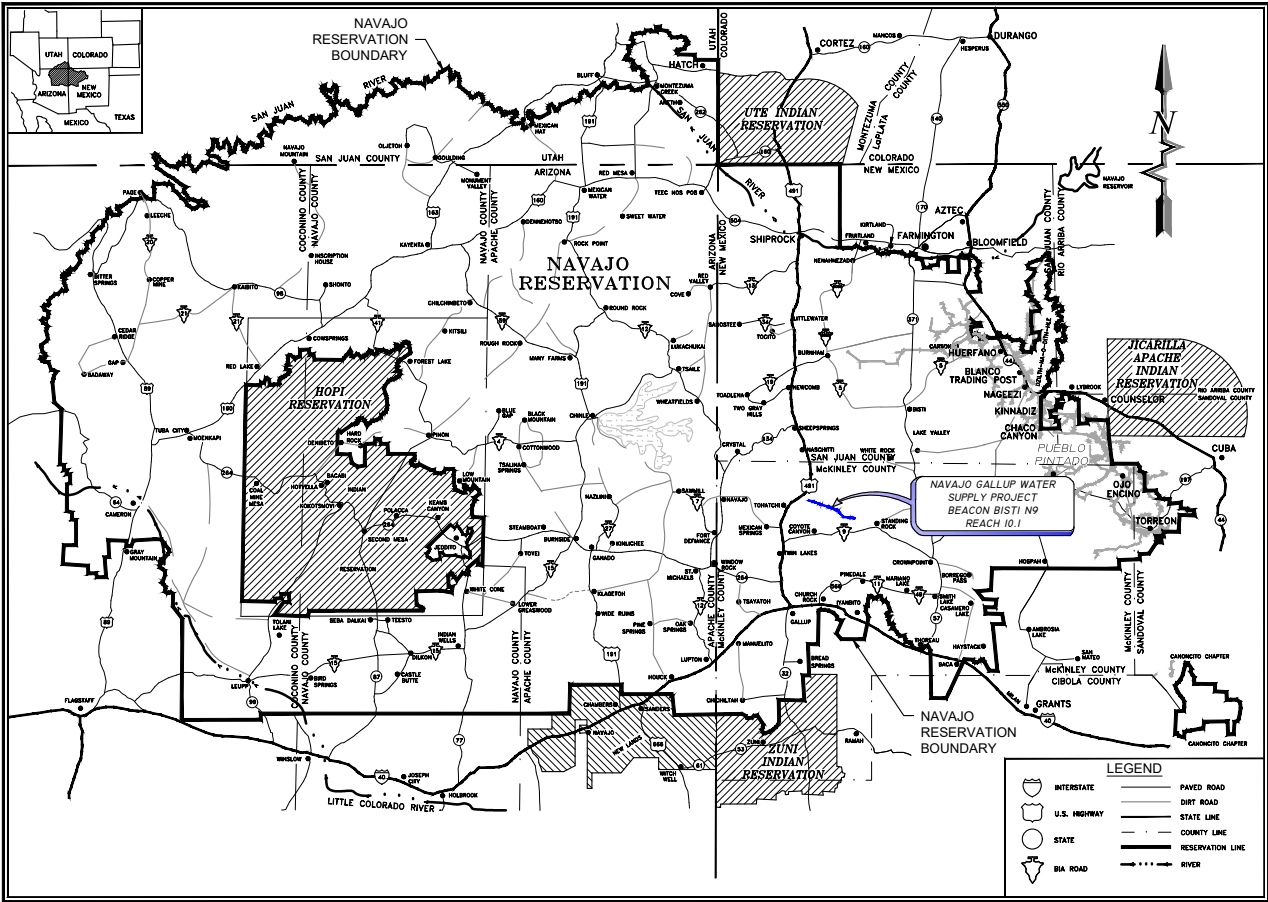


BUREAU OF
RECLAMATION

NGWSP SAN JUAN LATERAL TO BBN9 PUMPING PLANT 12

February 2022
PROJECT DESCRIPTION

THE PROJECT CONSISTS OF CONSTRUCTION OF 10.80 MILES OF 16" PVC WATERLINE WITH (2x) 75,000 GALLON WATER STORAGE TANKS AND A SURGE TANK BUILDING.



NAVAJO RESERVATION
PROJECT SITE MAP

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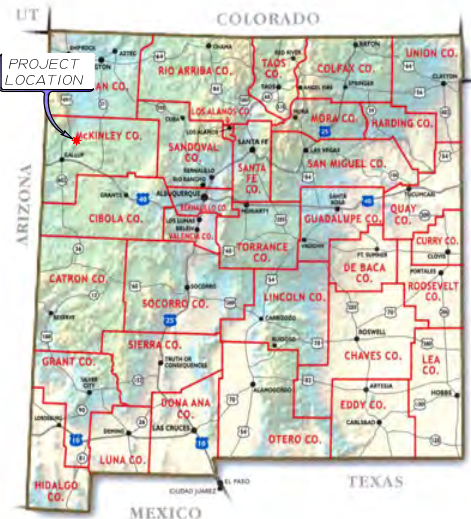
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Client: The Navajo Nation

Location: Coyote Canyon, NM

COVER SHEET & DRAWING INDEX

NAVAJO GALLUP WATER SUPPLY PROJECT

BEACON BISTI N9 - REACH 10.1

MCKINLEY COUNTY, NEW MEXICO

90% REVIEW

DRAFT

PRELIMINARY

NOT FOR CONSTRUCTION

2/2022

Designed TTT

Drawn MvH/AaV

Checked JMG

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

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

Date: February 2022

Scale: Horiz: N/A

Vert: N/A

Project No: 6922268

Sheet: G-1

P:\6-Beacon Bisti N9 Water Line (6922268)\CAD\Civil\Reach 10.1 Plan Set\Construction Plans\BBN9 Reach 10.1 Cover-Gem Notes.dwg
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GENERAL NOTES

- 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.
- 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.
- 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.
- CONTRACTOR SHALL REPAIR ANY EXISTING STRUCTURE OR UTILITY PIPELINE DAMAGED DURING THE EXECUTION OF THE PROJECT, AT NO ADDITIONAL COSTS TO THE OWNER.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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-SEEDDED PER THE CONTRACT DOCUMENTS.
- 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.
- 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.
- ALL PRESSURE RATINGS GIVEN HEREIN FOR PIPES, VALVES, FITTINGS AND OTHER COMPONENTS REFER TO COLD WATER WORKING PRESSURE RATING, UNLESS OTHERWISE NOTED.
- 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.

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

CONTACT INFORMATION:

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SOUDER, MILLER & ASSOCIATES (ENGINEER):

TORY TADANO, P.E (OFFICE) (505) 299-0942

NAVAJO TRIBAL UTILITY AUTHORITY (NTUA):

(928) 729-5721

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
IA.	INDIAN ALLOTMENT
ID.	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
TOE	TOE OF SLOPE
TOP	TOP OF PIPE
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

LEGEND

	EXISTING ISOLATION VALVE
	WATER VAULT
	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
	CONTOUR MAJOR
	CONTOUR MINOR
	SECTION CORNER
	CULTURALLY SENSITIVE AREA DO NOT ENCROACH
	Navajo Tribal Trust
	CURRENT LAND STATUS (OWNER)
	SECTION LINE
	TOWNSHIP / RANGE LINE
	FENCE
	OVERHEAD POWER LINE
	UNDERGROUND POWER LINE
	OVERHEAD TELEPHONE LINE
	UNDERGROUND TELEPHONE LINE
	WATER LINE
	GAS LINE

LEGEND

PROPOSED

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

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Client: The Navajo Nation Location: Coyote Canyon, NMT

GENERAL NOTES AND LEGEND
NAVAJO GALLUP WATER SUPPLY PROJECT
BEACON BISTI N9 - REACH 10.1
MCKINLEY COUNTY, NEW MEXICO

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811 Know what's
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CALL before
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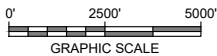
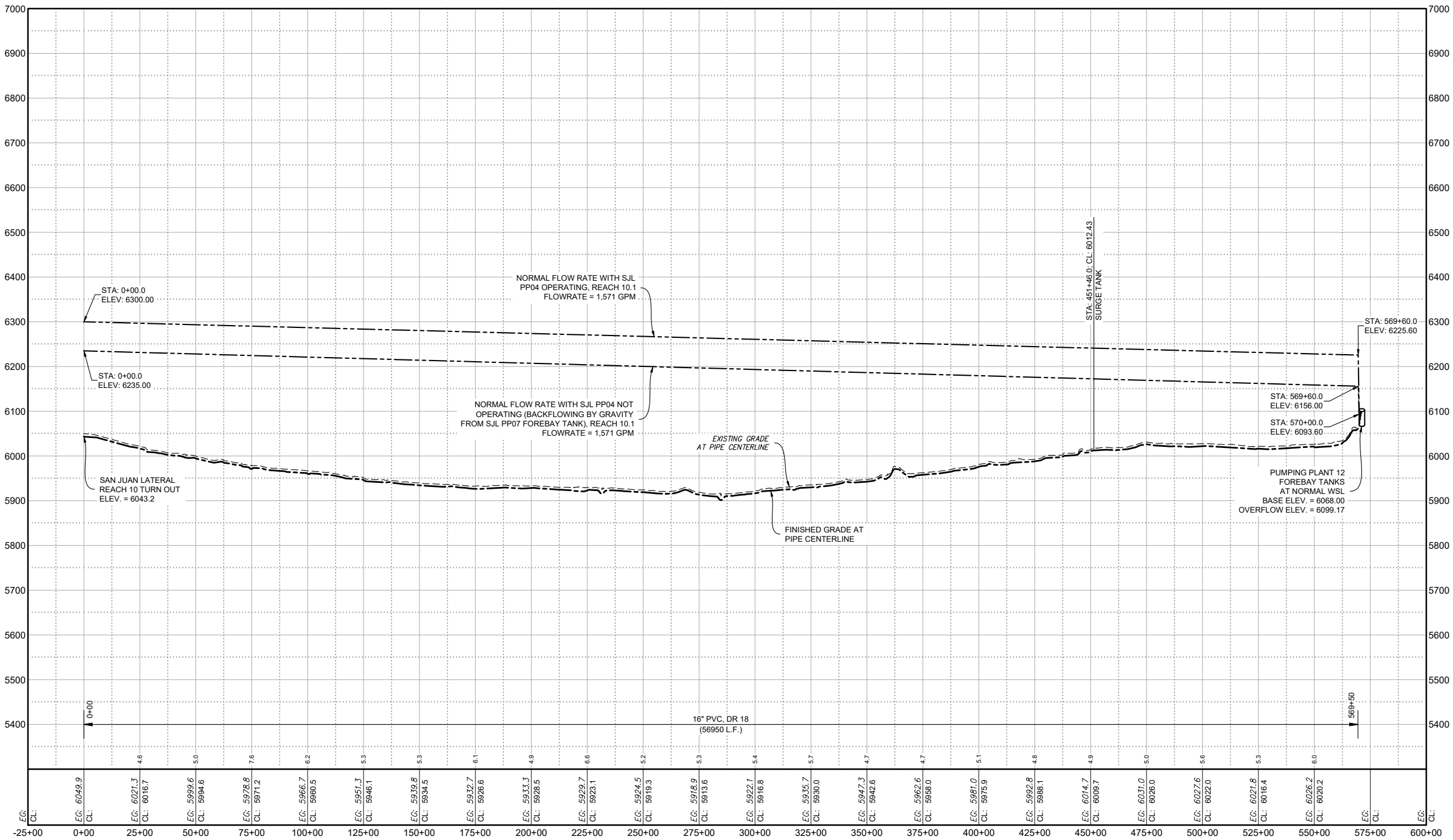
Date: February 2022

Scale: Horiz: N/A
Vert: N/A

Project No: 6922268

Sheet: G-2

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BBN9 REACH 10.1 HYDRAULIC PROFILE
16" WATERLINE

Revision	Date	Description	By	Chkd

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SMA

Client: The Navajo Nation
Location: Coyote Canyon, NM

HYDRAULIC PROFILE
NAVAJO GALLUP WATER SUPPLY PROJECT
BEACON BISTI N9 - REACH 10.1
MCKINLEY COUNTY, NEW MEXICO

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Date: February 2022
Scale: Horiz: 1" = 5000'
Vert: 1" = 200'

Project No: 6922268
Sheet: **G-4**

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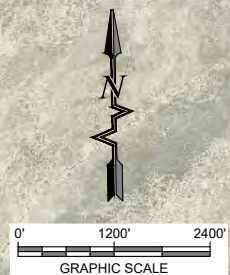


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2/17/2022 11:51:12 AM mth

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ENGINEER: SOUDER, MILLER & ASSOCIATES
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(928) 729-5721



PROJECT SITE PLAN AND DRAWING KEY INDEX

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Revision	Date	Description	By	CHKD

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Client: The Navajo Nation
Location: Coyote Canyon, NM

SITE PLAN AND DRAWING KEY INDEX (1 OF 2)
NAVAJO GALLUP WATER SUPPLY PROJECT
BEACON BISTI N9 - REACH 10.1
MCKINLEY COUNTY, NEW MEXICO

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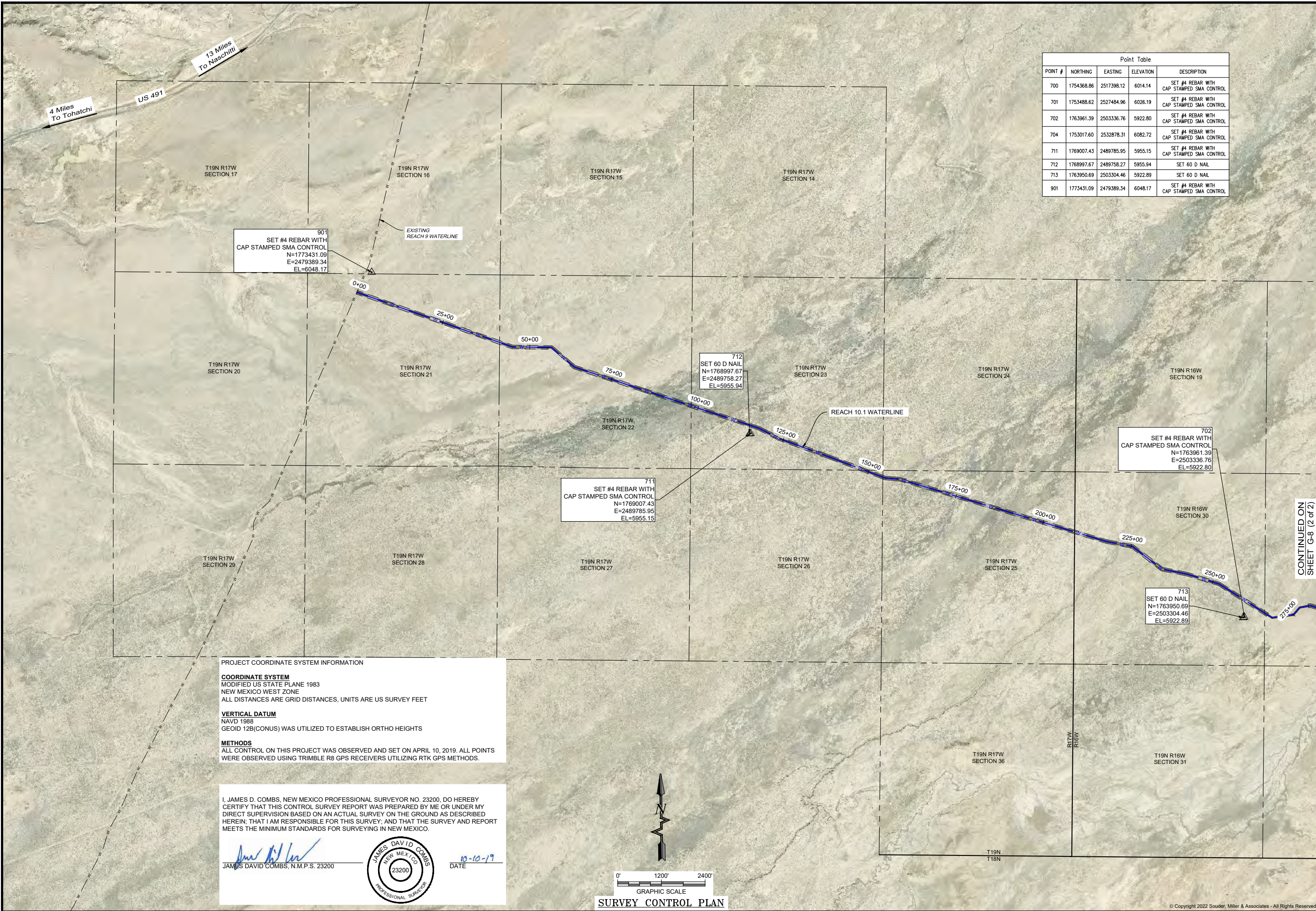
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Vert: N/A

Project No: 6922268

Sheet: **G-5**



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2/17/2022 11:51:38 AM mrv



Point Table				
POINT #	NORTHING	EASTING	ELEVATION	DESCRIPTION
700	1754368.86	2517398.12	6014.14	SET #4 REBAR WITH CAP STAMPED SMA CONTROL
701	1753488.62	2527484.96	6026.19	SET #4 REBAR WITH CAP STAMPED SMA CONTROL
702	1763961.39	2503336.76	5922.80	SET #4 REBAR WITH CAP STAMPED SMA CONTROL
704	1753017.60	2532878.31	6082.72	SET #4 REBAR WITH CAP STAMPED SMA CONTROL
711	1769007.43	2489785.95	5955.15	SET #4 REBAR WITH CAP STAMPED SMA CONTROL
712	1768997.67	2489758.27	5955.94	SET 60 D NAIL
713	1763950.69	2503304.46	5922.89	SET 60 D NAIL
901	1773431.09	2479389.34	6048.17	SET #4 REBAR WITH CAP STAMPED SMA CONTROL

PROJECT COORDINATE SYSTEM INFORMATION

COORDINATE SYSTEM
MODIFIED US STATE PLANE 1983
NEW MEXICO WEST ZONE
ALL DISTANCES ARE GRID DISTANCES, UNITS ARE US SURVEY FEET

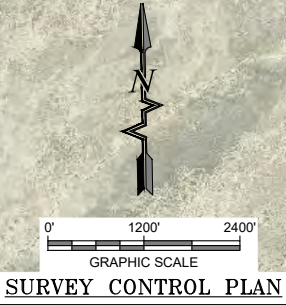
VERTICAL DATUM
NAVD 1988
GEOID 12B(CONUS) WAS UTILIZED TO ESTABLISH ORTHO HEIGHTS

METHODS
ALL CONTROL ON THIS PROJECT WAS OBSERVED AND SET ON APRIL 10, 2019. ALL POINTS WERE OBSERVED USING TRIMBLE R8 GPS RECEIVERS UTILIZING RTK GPS METHODS.

I, JAMES D. COMBS, NEW MEXICO PROFESSIONAL SURVEYOR NO. 23200, 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.

James D. Combs
JAMES DAVID COMBS, N.M.P.S. 23200

DATE 10-10-19



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Client: The Navajo Nation
Location: Coyote Canyon, NM

SURVEY CONTROL (1 OF 2)
NAVAJO GALLUP WATER SUPPLY PROJECT
BEACON BISTI N9 - REACH 10.1
MCKINLEY COUNTY, NEW MEXICO

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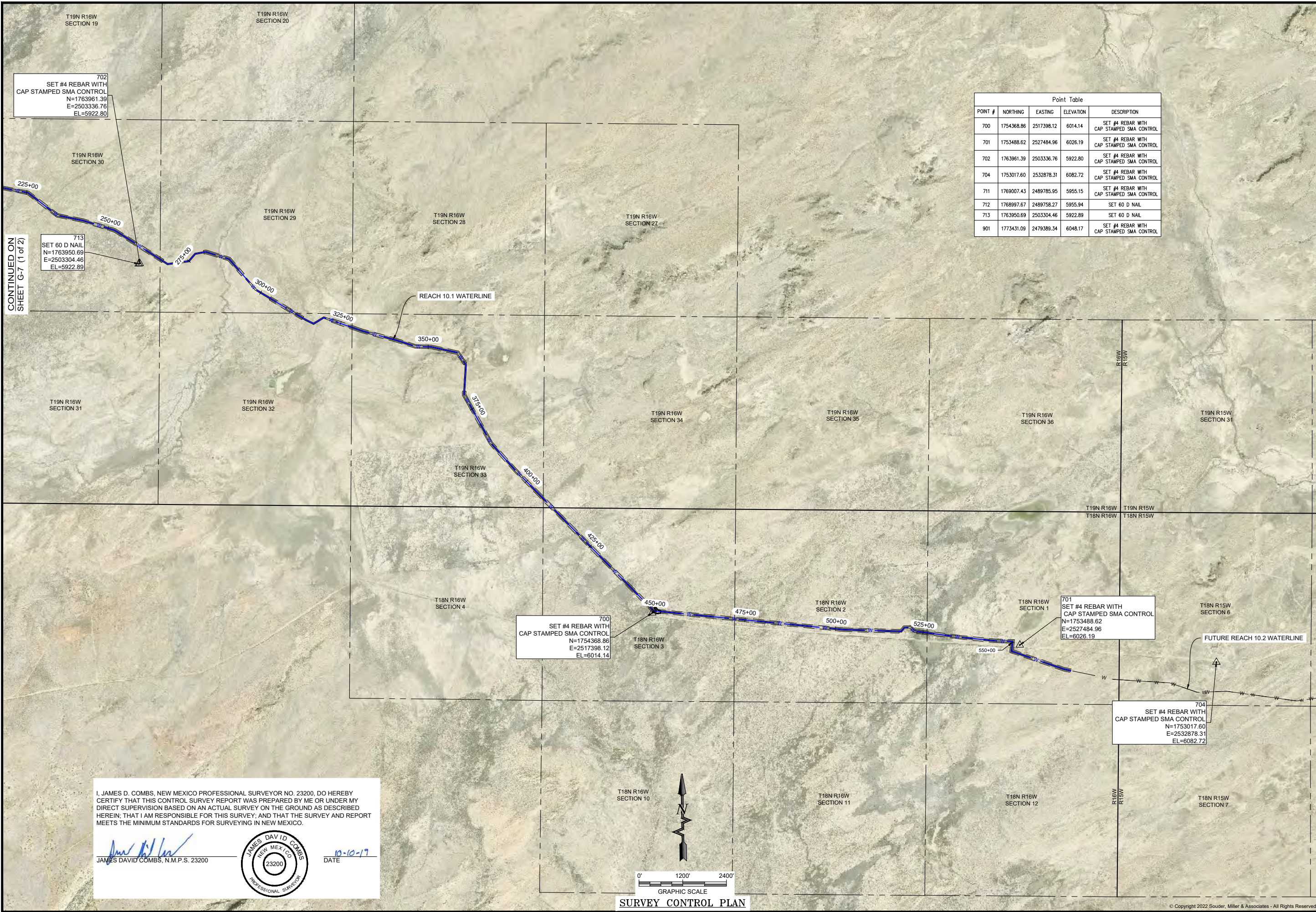
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JAMES DAVID COMBS, N.M.P.S. 23200



DATE 10-10-19

Client: The Navajo Nation

Location: Coyote Canyon, NM

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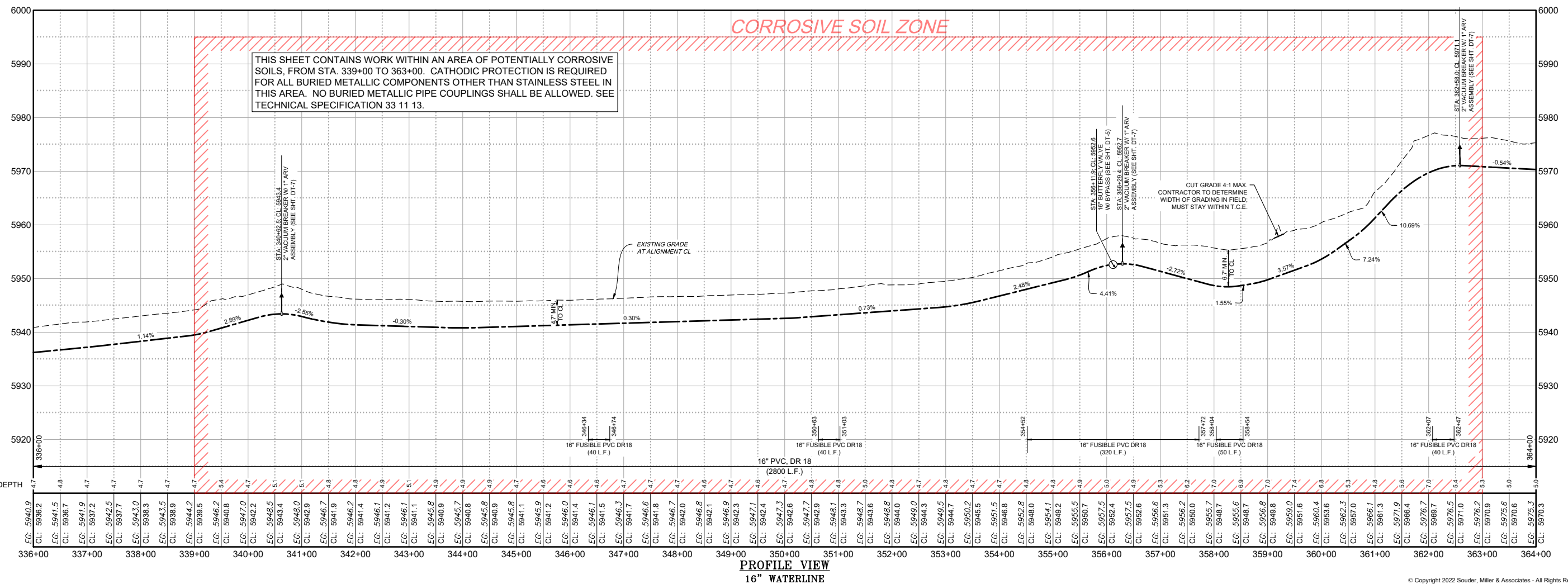
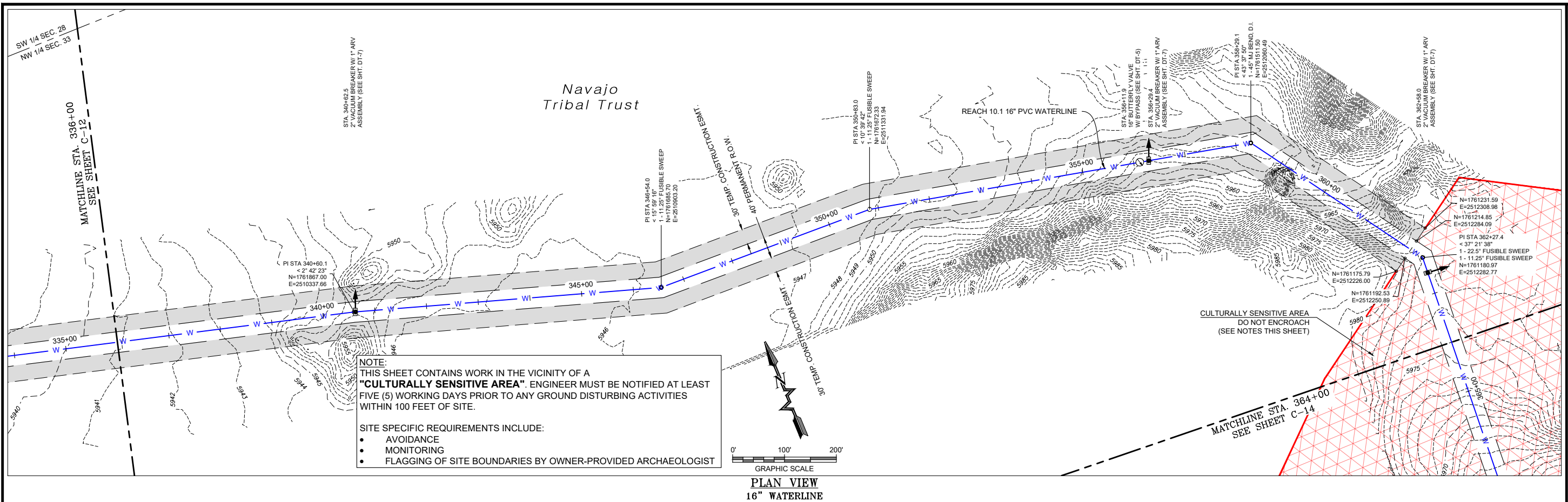
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The image shows the 811 logo, which consists of the number '811' in a large, bold, black font. Above the number, the text '90% REVIEWED' is written in a curved, red font, and 'DRAFT' is written in a large, bold, red font. Below the number, the text 'Know what's BELOW. CALL before you dig.' is written in a black font. At the bottom, there is a table with three columns: 'Designed', 'Drawn', and 'Checked'. The 'Designed' column contains 'TTT', the 'Drawn' column contains 'MvH/AaV', and the 'Checked' column contains 'JMG'. Below the table, there is a text box that says 'THIS DRAWING IS INCOMPLETE AND NOT TO BE USED FOR CONSTRUCTION UNLESS IT IS STAMPED, SIGNED AND DATED'. At the bottom, there is a date field 'Date: February 2022', a scale field 'Scale: Horiz: 1" = 200' Vert: 1" = 20'', a project number field 'Project No: 6922268', and a sheet number field 'Sheet: C-10'.

Project No:	6922268
Sheet:	C-10



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Client: The Navajo Nation
Location: Coyote Canyon, NM

Client: The Navajo Nation
Location: Coyote Canyon, NM

**PLAN AND PROFILE STA 336+00 To STA 364+00
NAVAJO GALLUP WATER SUPPLY PROJECT
BEACON BISTI N9 - REACH 10.1**

McKINLEY COUNTY, NEW MEXICO
SECTION 33, T. 19 N., R. 16 W.

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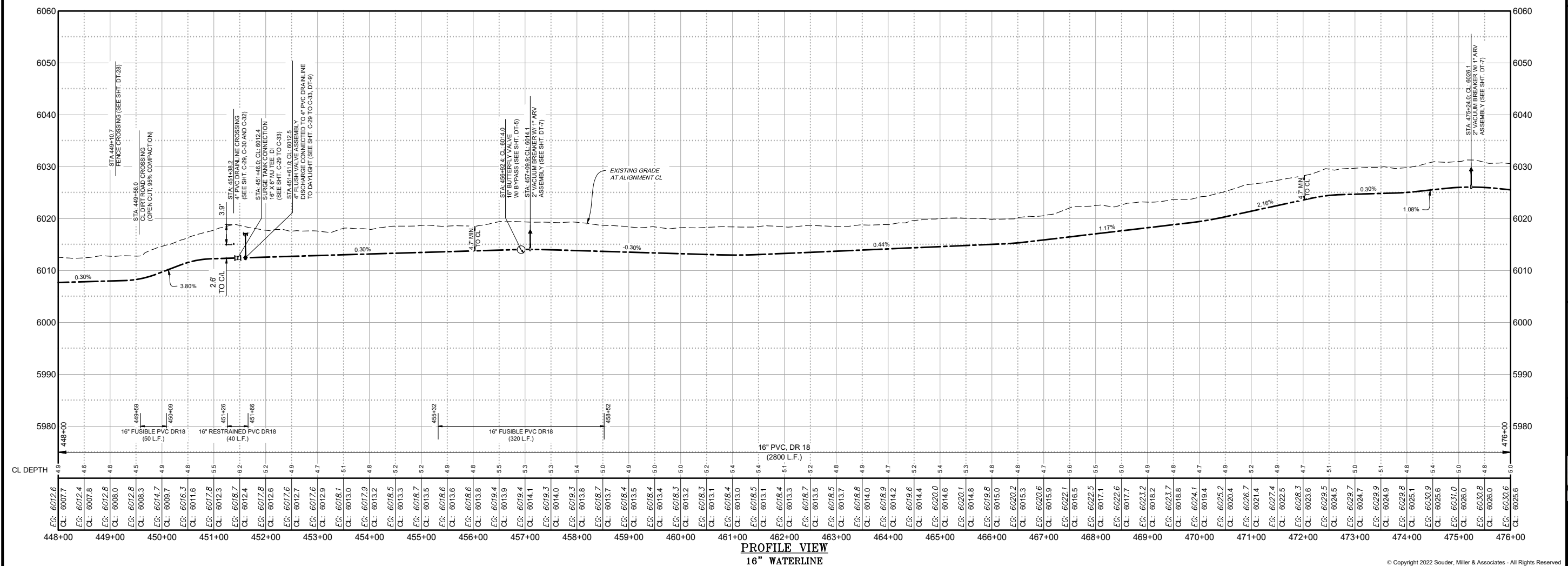
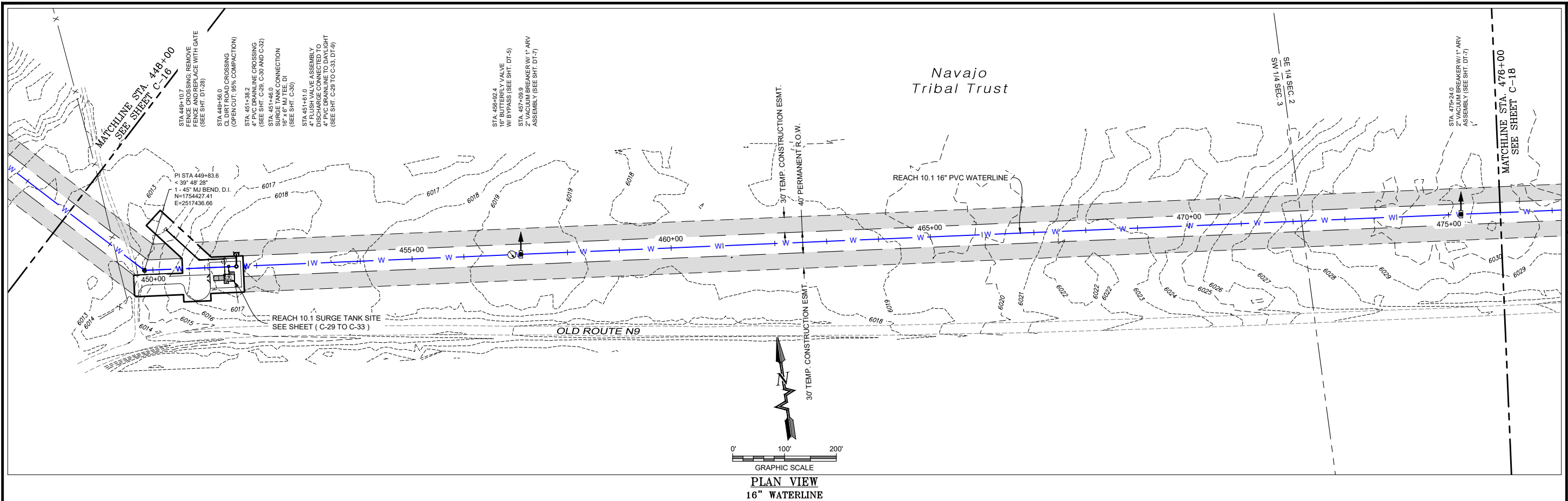
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Sheet: C-13

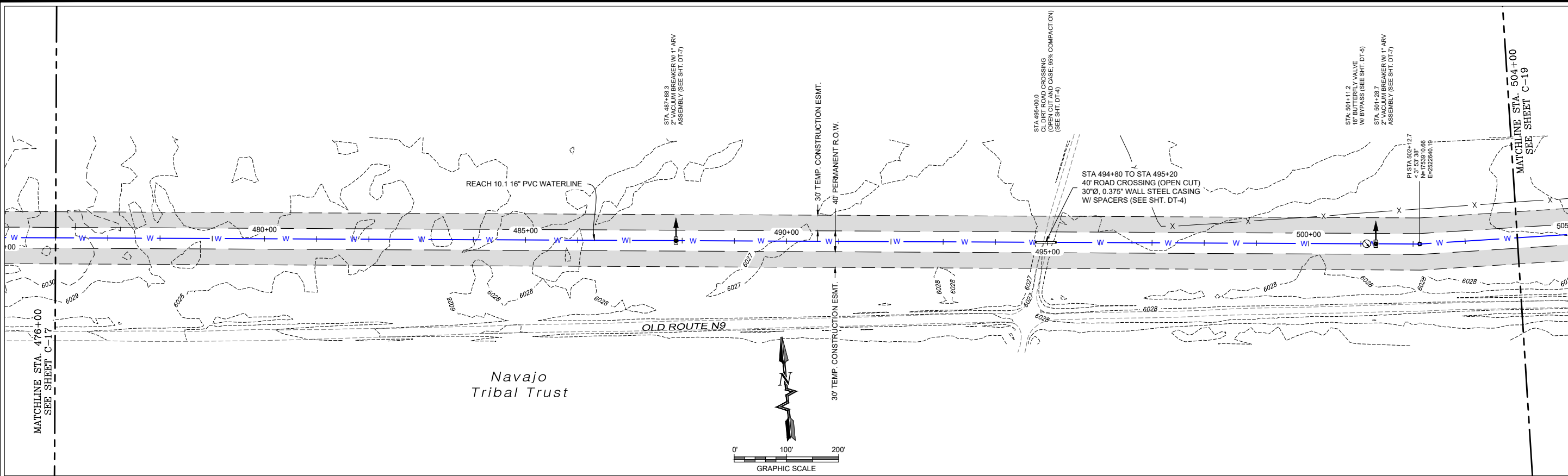


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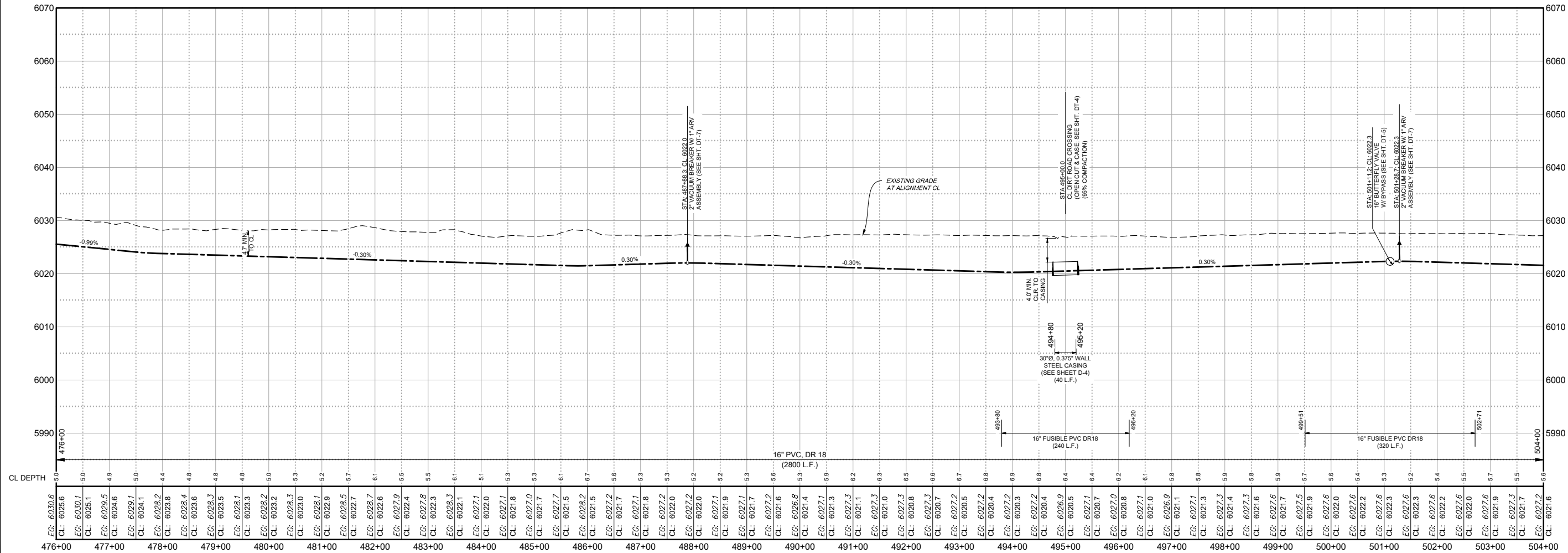
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PLAN VIEW
16" WATERLINE



PROFILE VIEW
16" WATERLINE

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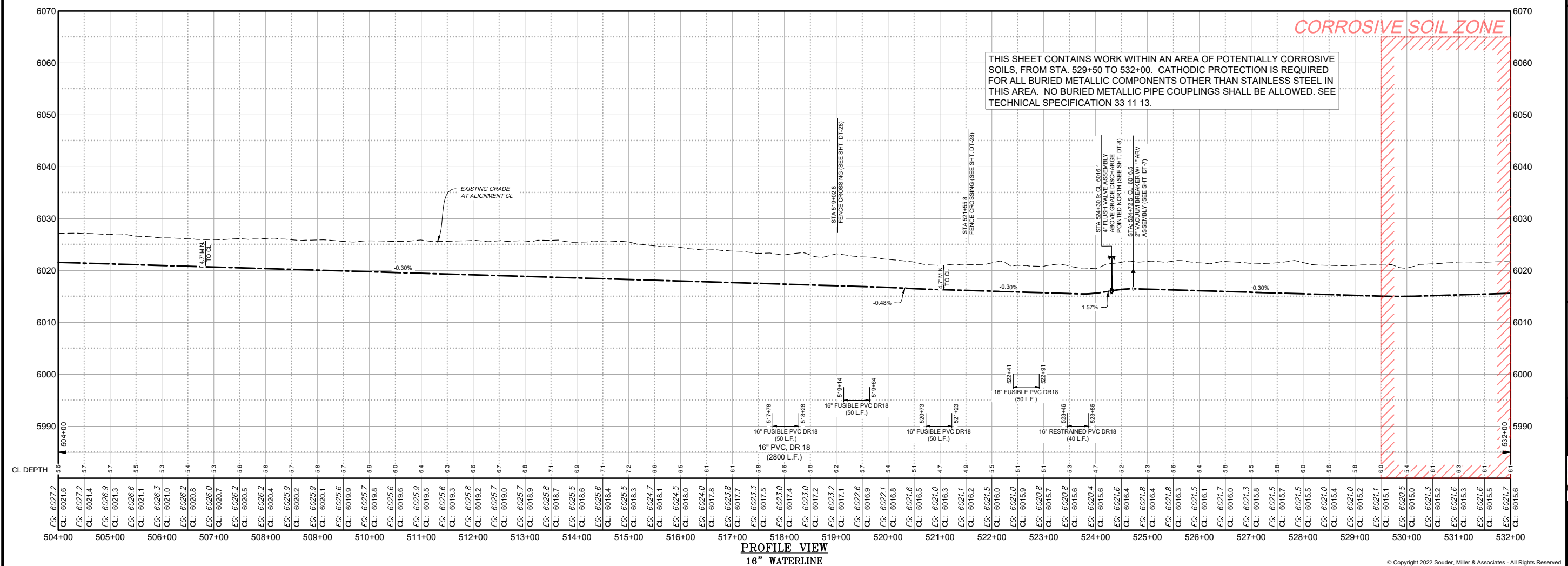
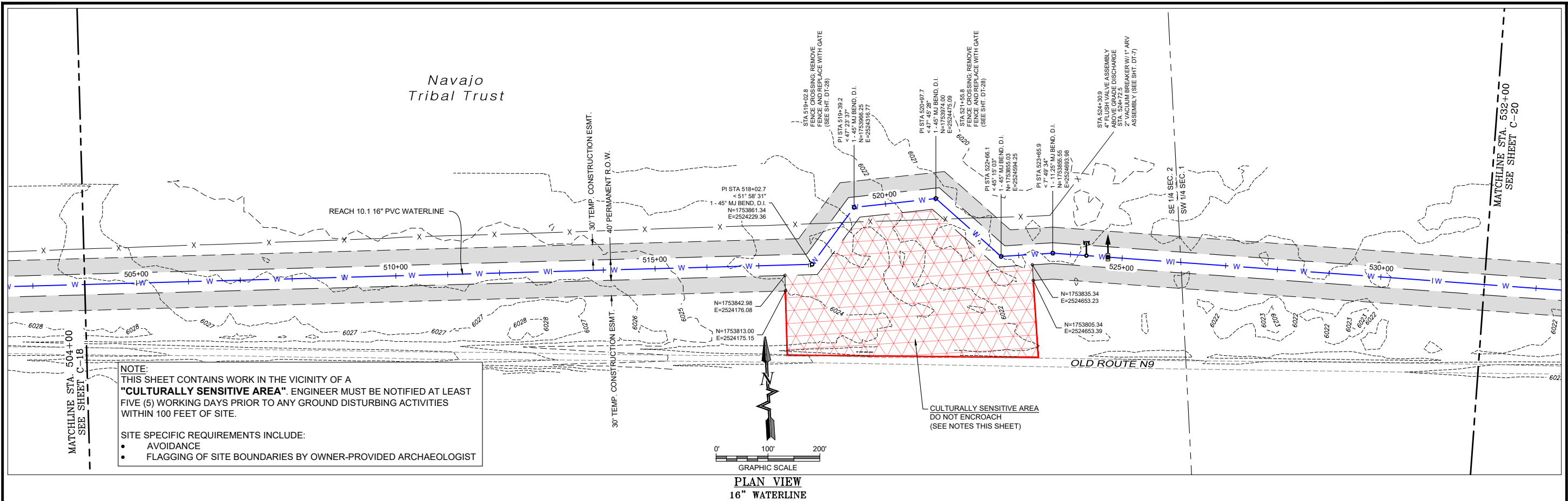
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Client: The Navajo Nation
Location: Coyote Canyon, NM
PLAN AND PROFILE STA 476+00 TO STA 504+00
NAVAJO GALLUP WATER SUPPLY PROJECT
BEACON BISTI N9 - REACH 10.1
MCKINLEY COUNTY, NEW MEXICO
SECTION 2, T. 18 N., R. 16 W.

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Vert: 1" = 20'
Project No: 6922268
Sheet: **C-18**

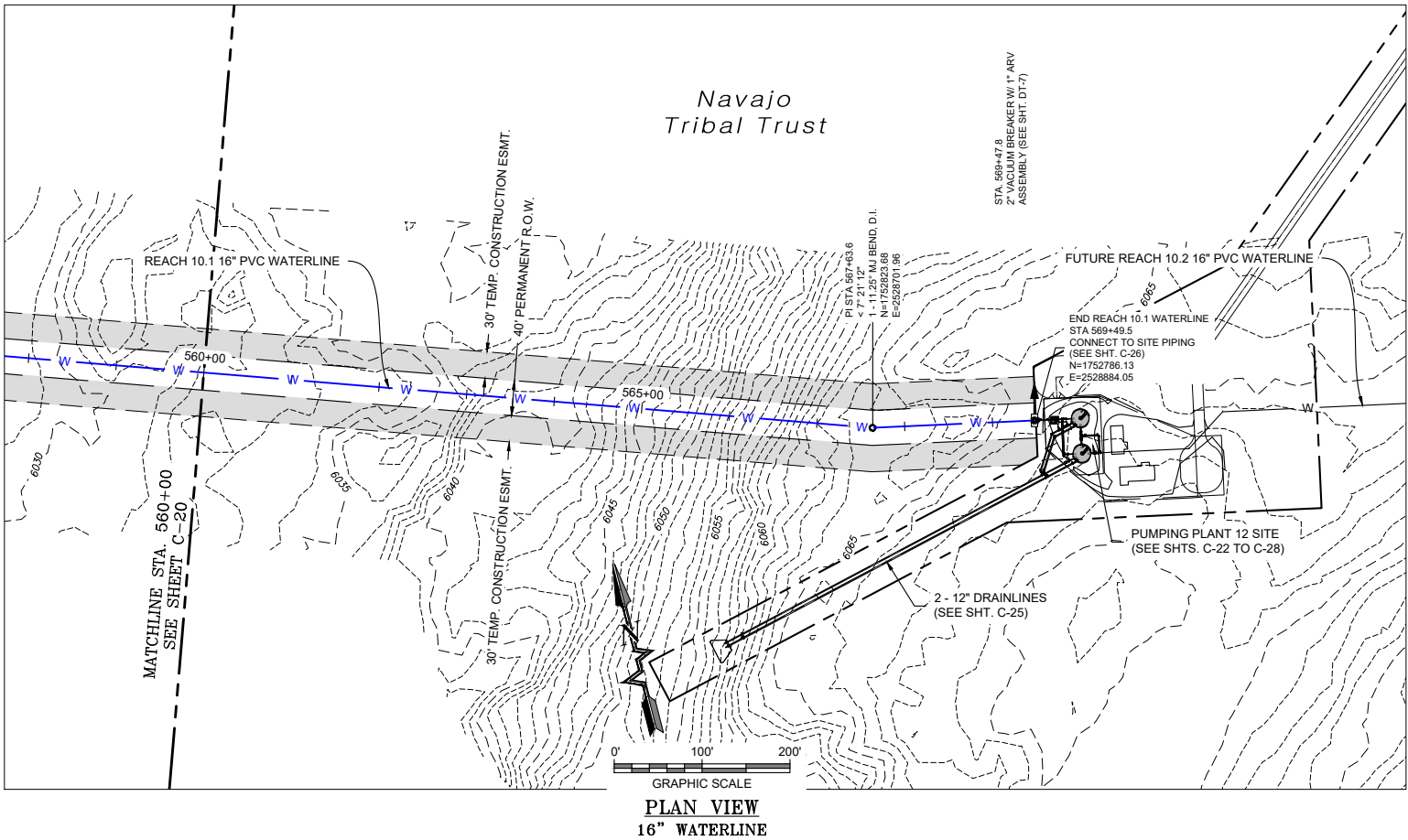
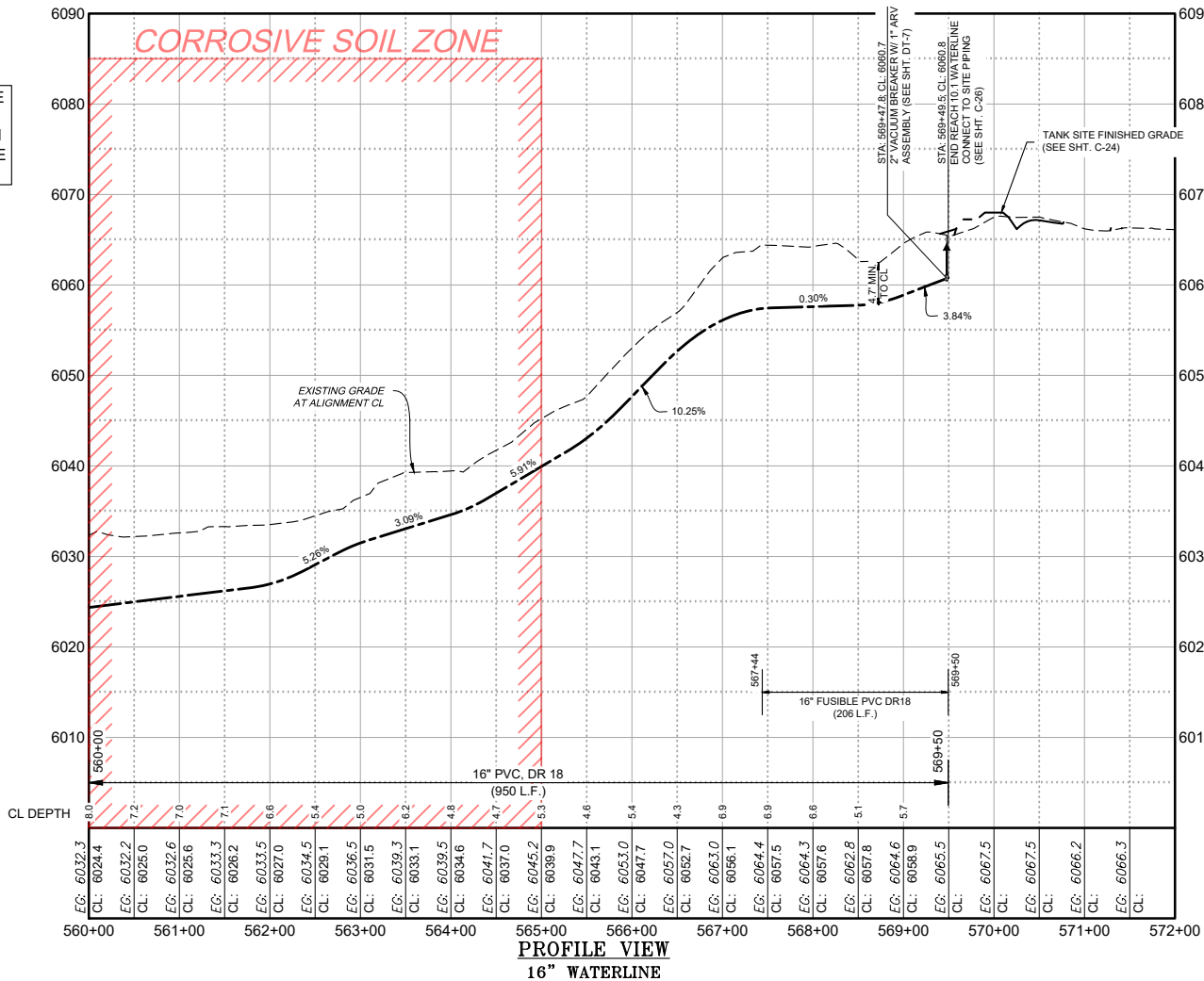
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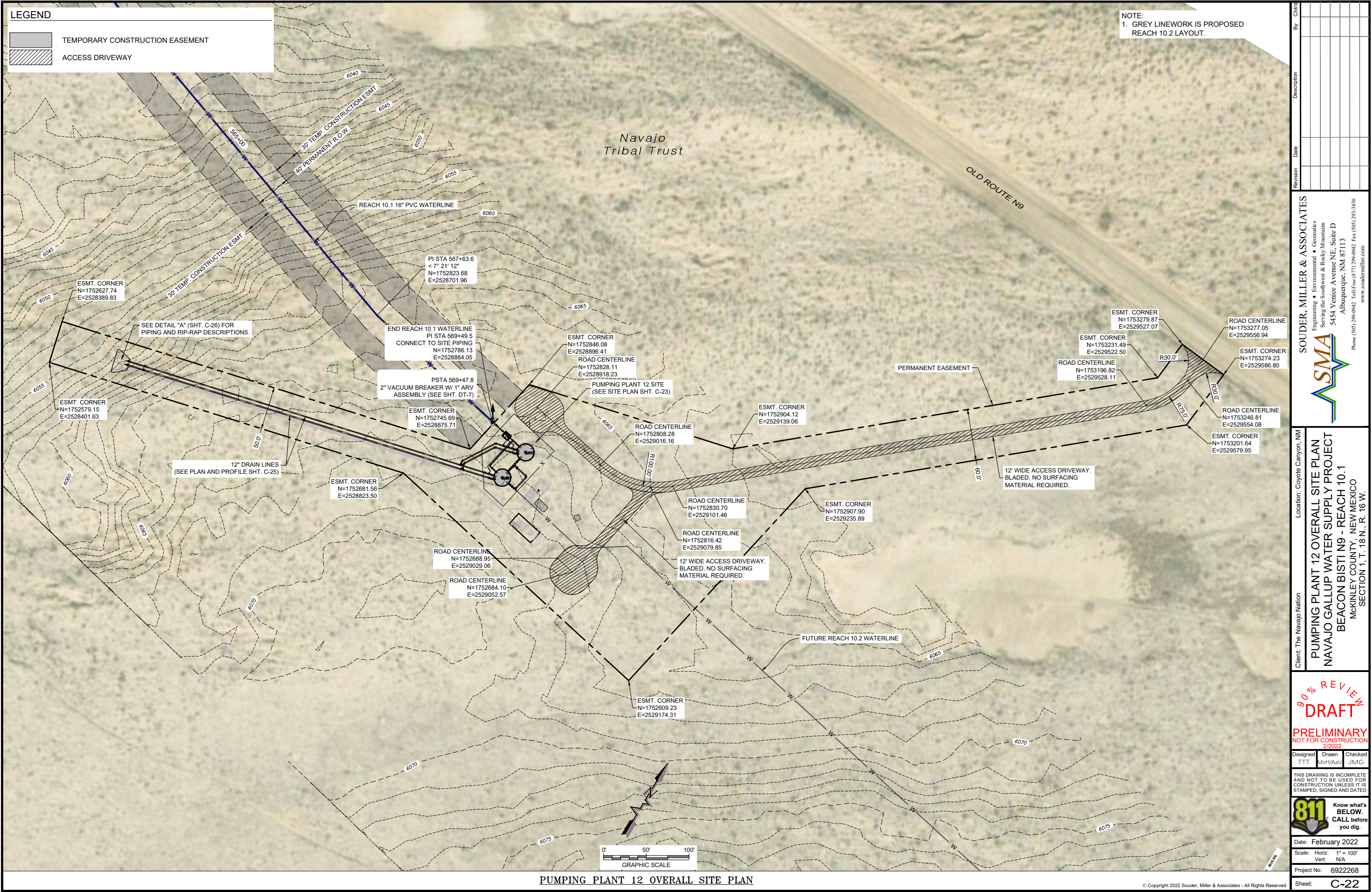
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2/17/2022 11:57:49 AM mth

THIS SHEET CONTAINS WORK WITHIN AN AREA OF POTENTIALLY CORROSIVE SOILS, FROM STA. 560+00 TO 565+00. CATHODIC PROTECTION IS REQUIRED FOR ALL BURIED METALLIC COMPONENTS OTHER THAN STAINLESS STEEL IN THIS AREA. NO BURIED METALLIC PIPE COUPLINGS SHALL BE ALLOWED. SEE TECHNICAL SPECIFICATION 33 11 13.





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2/17/2022 11:58:19 AM mrvh

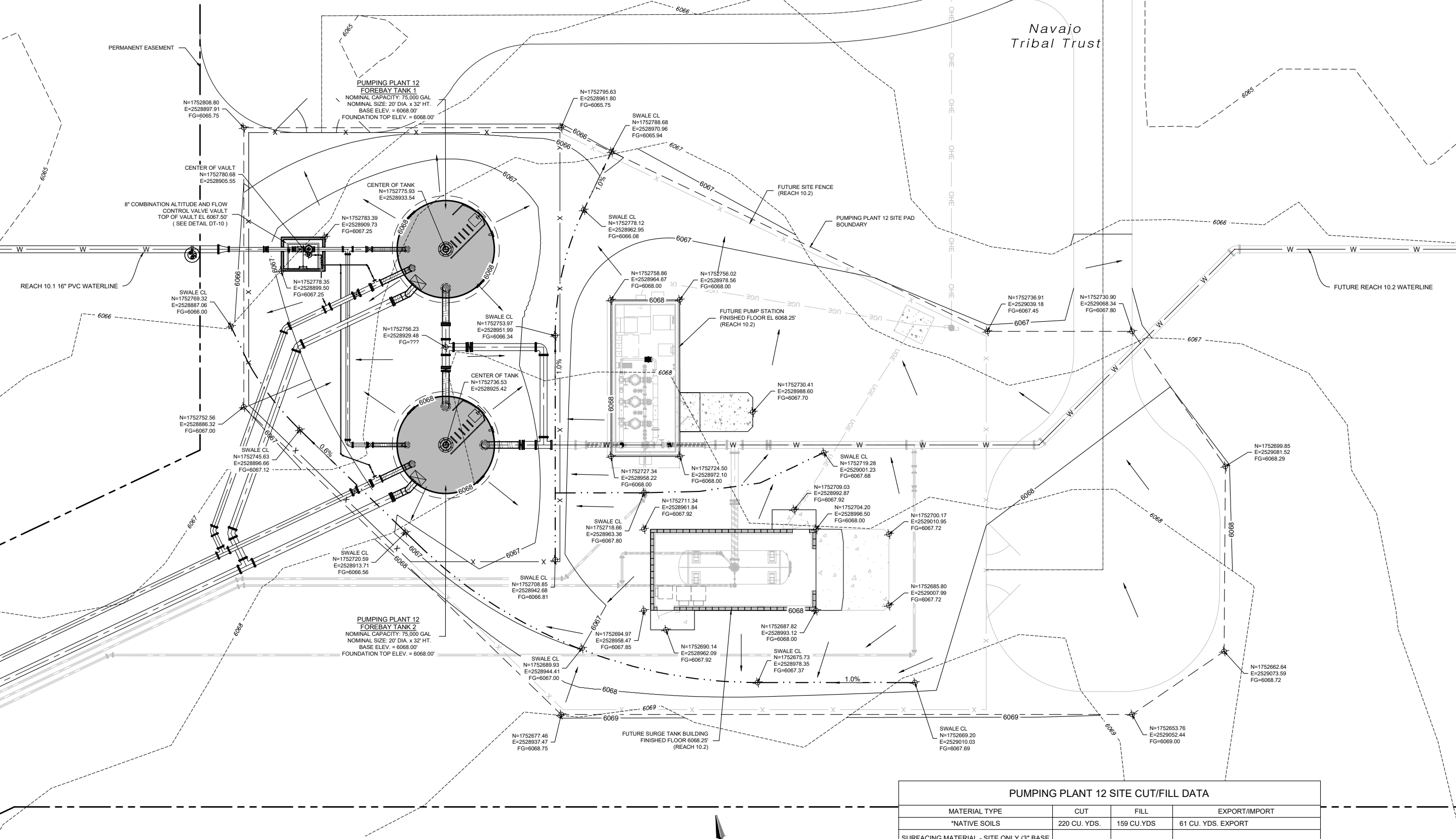
Client: The Navajo Nation	Location: Coyote Canyon, NM	90% REVIEW DRAFT
PUMPING PLANT 12 OVERALL SITE PLAN NAVAJO GALLUP WATER SUPPLY PROJECT BEACON BISTI N9 - REACH 10.1 McKINLEY COUNTY, NEW MEXICO SECTION 1, T. 18 N., R. 16 W.		
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LEGEND

PUMPING PLANT 12 SITE PAD EXTENTS

NOTES:
1. GREY LINEWORK IS PROPOSED REACH 10.2 LAYOUT.



PUMPING PLANT 12 SITE CUT/FILL DATA

MATERIAL TYPE	CUT	FILL	EXPORT/IMPORT
*NATIVE SOILS	220 CU. YDS.	159 CU. YDS.	61 CU. YDS. EXPORT
SURFACING MATERIAL - SITE ONLY (3" BASE COURSE AND 2" FINISH GRAVEL)	0 CU. YDS.	185 CU. YDS.	185 CU. YDS. IMPORT
SURFACING MATERIAL - ENTRY DRIVE (3" BASE COURSE ONLY)	0 CU. YDS.	0 CU. YDS.	0 CU. YDS. IMPORT
ENGINEERED FILL	---	---	-- CU. YDS. IMPORT
RIP RAP (UNCAGED)	---	34 CU. YDS.	34 CU. YDS. IMPORT

- NOTES:
- THESE EARTHWORK QUANTITIES ARE ESTIMATES, PROVIDED FOR THE CONTRACTOR'S CONVENIENCE ONLY. BIDDER IS NOT ENTITLED TO BASE HIS/HER BID ON THESE QUANTITIES, NOR TO SUBMIT ANY CLAIM IN THE EVENT THAT ACTUAL EARTHWORK QUANTITIES DIFFER FROM THESE ESTIMATES.
 - ALL GRADING WORKS SHALL BE COMPACTED TO 95% STANDARD PROCTOR.

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Client: The Navajo Nation
Location: Coyote Canyon, NM
PUMPING PLANT 12 SITE GRADING PLAN
NAVAJO GALLUP WATER SUPPLY PROJECT
BEACON BISTI N9 - REACH 10.1
McKINLEY COUNTY, NEW MEXICO
SECTION 1, T. 18 N., R. 16 W.

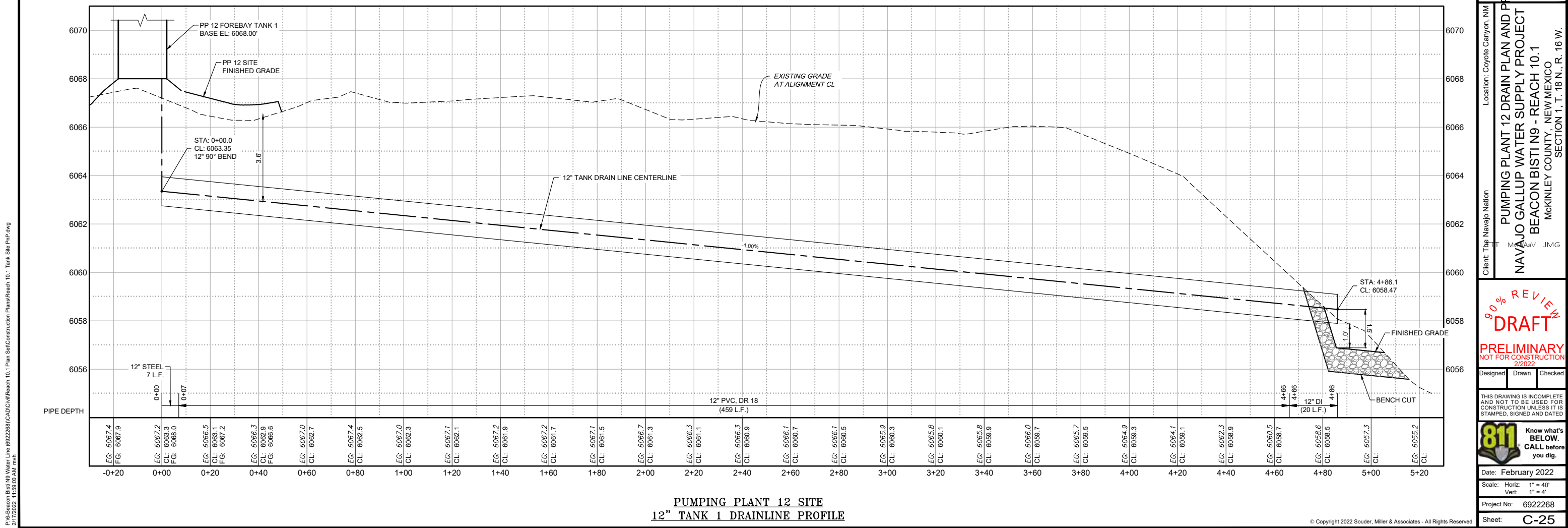
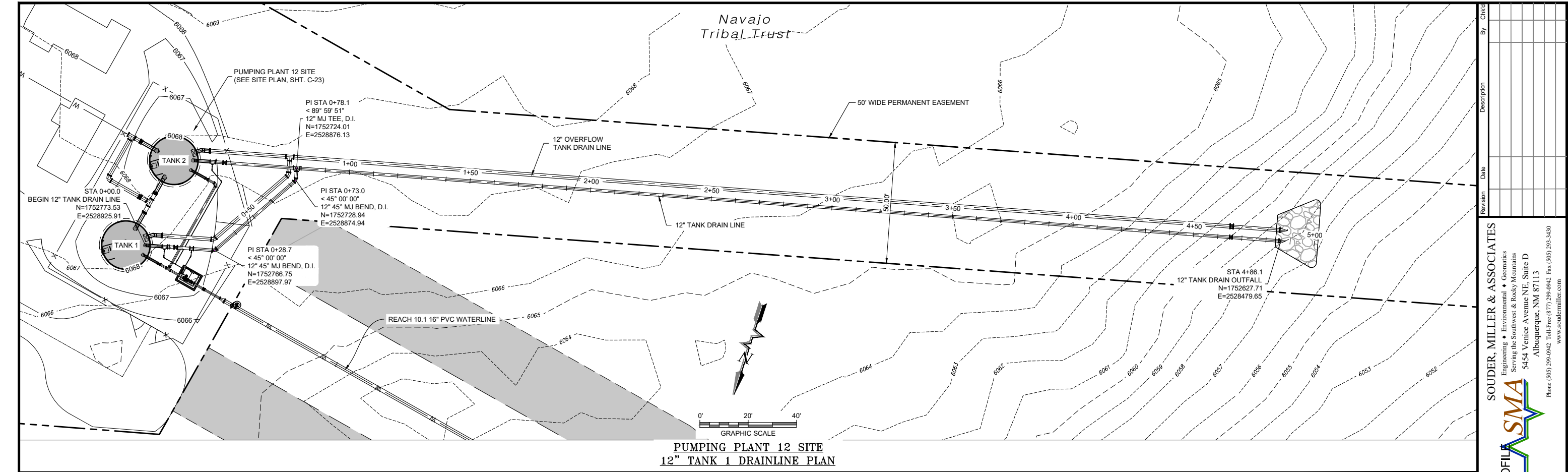
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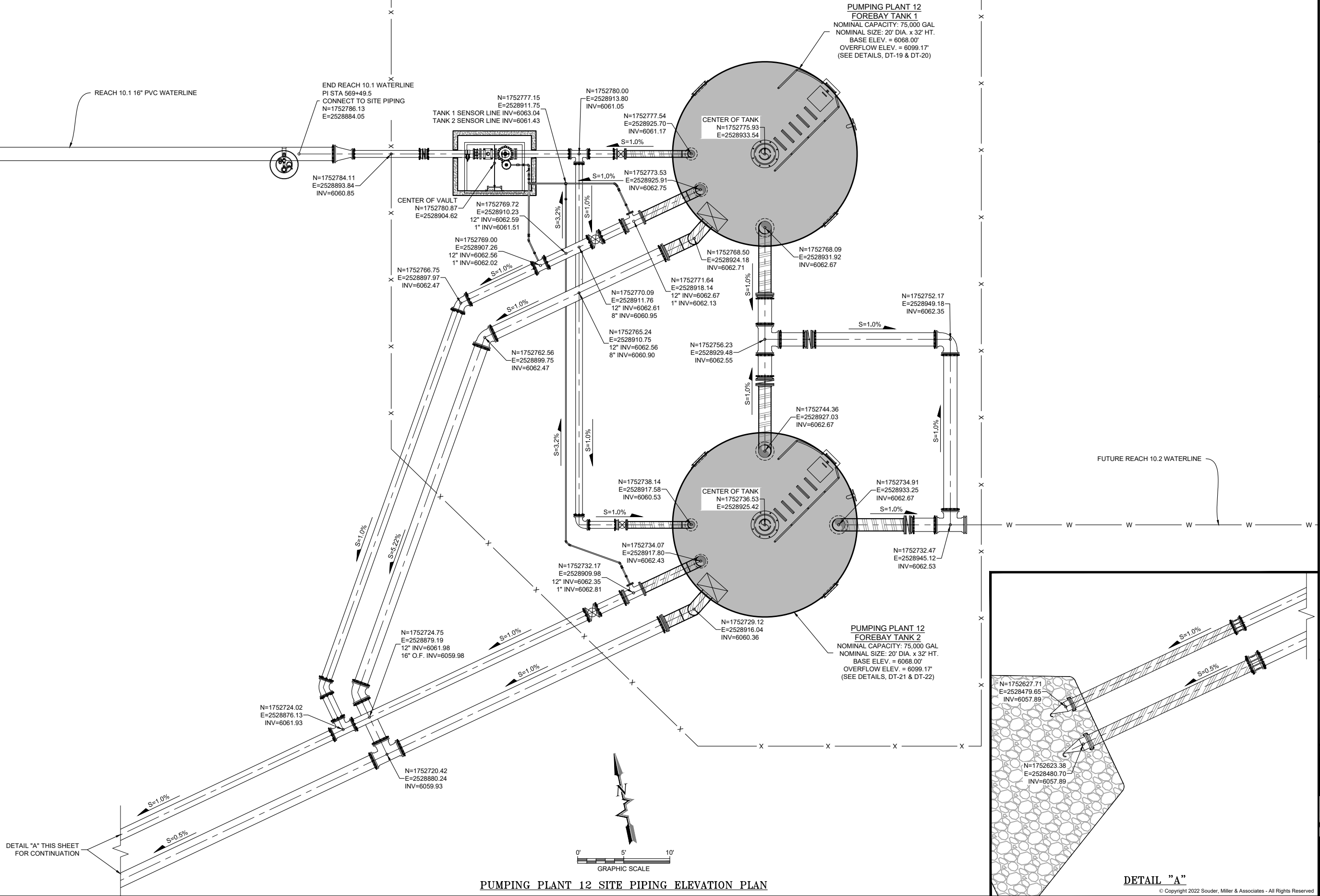
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Project No: 6922268
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Client: The Navajo Nation
Location: Coyote Canyon, NM
PUMPING PLANT 12 SITE PIPING ELEVATION PLAN
NAVAJO GALLUP WATER SUPPLY PROJECT
BEACON BISTI N9 - REACH 10.1
McKINLEY COUNTY, NEW MEXICO
SECTION 1, T. 18 N., R. 16 W.

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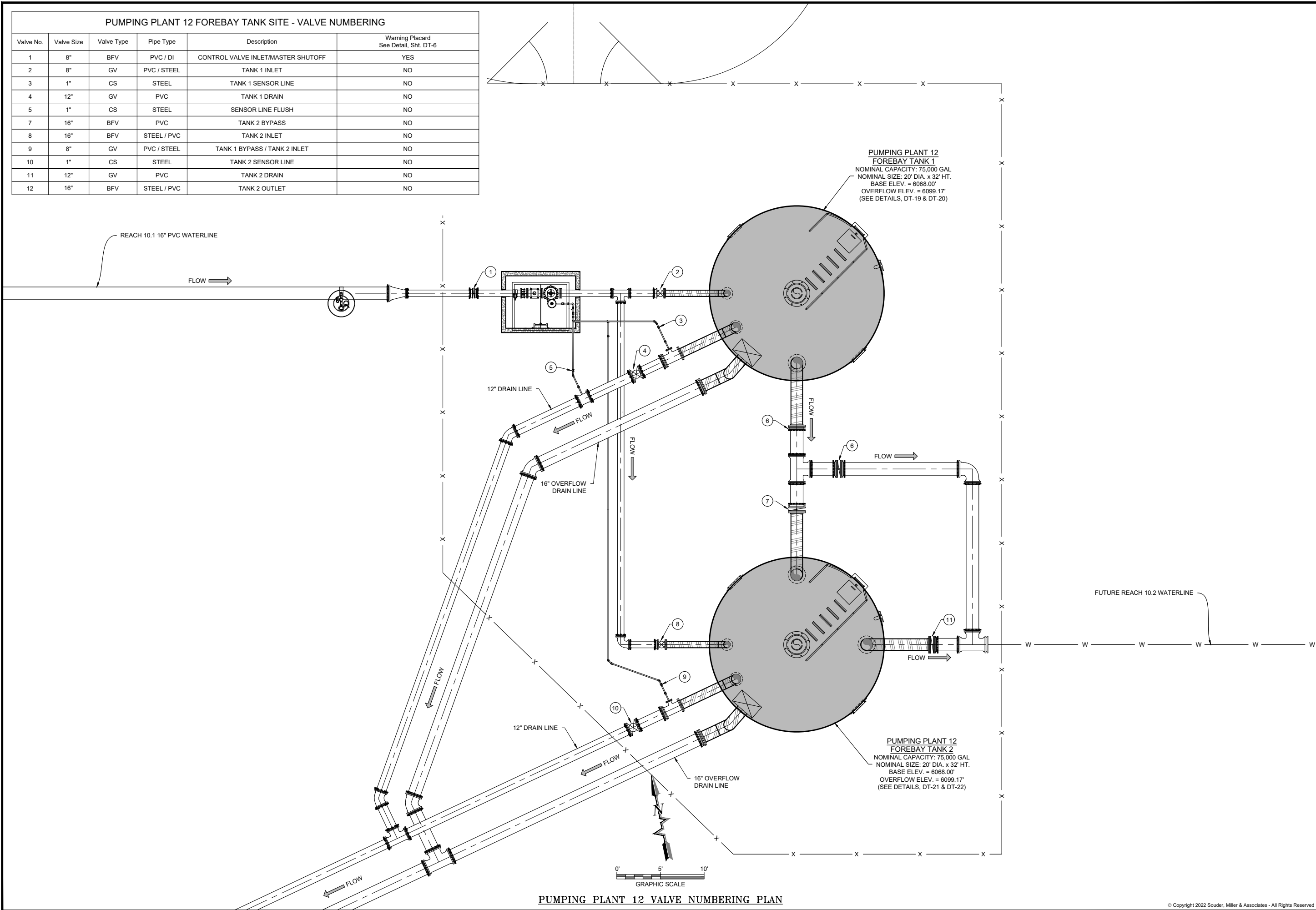
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2/17/2022 11:59:37 AM mrvh

PUMPING PLANT 12 FOREBAY TANK SITE - VALVE NUMBERING					
Valve No.	Valve Size	Valve Type	Pipe Type	Description	Warning Placard See Detail, Sht. DT-6
1	8"	BFV	PVC / DI	CONTROL VALVE INLET/MASTER SHUTOFF	YES
2	8"	GV	PVC / STEEL	TANK 1 INLET	NO
3	1"	CS	STEEL	TANK 1 SENSOR LINE	NO
4	12"	GV	PVC	TANK 1 DRAIN	NO
5	1"	CS	STEEL	SENSOR LINE FLUSH	NO
7	16"	BFV	PVC	TANK 2 BYPASS	NO
8	16"	BFV	STEEL / PVC	TANK 2 INLET	NO
9	8"	GV	PVC / STEEL	TANK 1 BYPASS / TANK 2 INLET	NO
10	1"	CS	STEEL	TANK 2 SENSOR LINE	NO
11	12"	GV	PVC	TANK 2 DRAIN	NO
12	16"	BFV	STEEL / PVC	TANK 2 OUTLET	NO



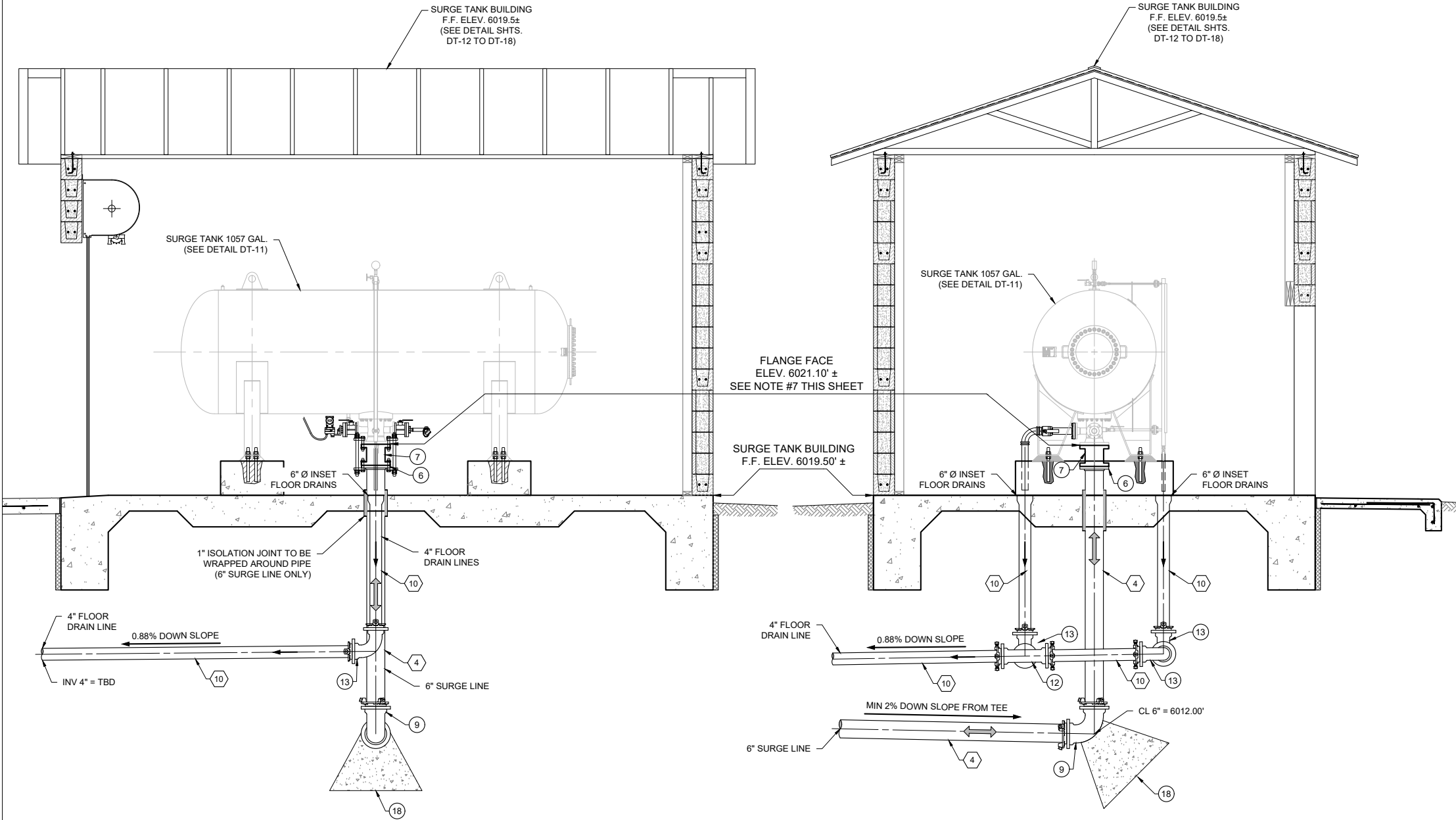
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Client: The Navajo Nation Location: Coyote Canyon, NM PUMPING PLANT 12 VALVE NUMBERING PLAN NAVAJO GALLUP WATER SUPPLY PROJECT BEACON BISTI N9 - REACH 10.1 MCKINLEY COUNTY, NEW MEXICO SECTION 1, T. 18 N., R. 16 W.				
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Sheet: C-28				

P:\6-Beacon Bisti N9 Water Line (6922268)\CADD\Construction Plans\Reach 10.1 Surge tank, Sheplan.dwg
2/17/2022 12:01:30 PM mmh

KEYED NOTES - SURGE TANK SITE	
Item No.	Description
1	16" PVC DR18 PIPE
2	16" x 16" x 6" MJ x MJ REDUCING TEE, D.I. 350 psi
3	6" PVC DR18 PIPE
4	6" FL x PE DUCTILE IRON PIPE, 350 psi
5	6" FL x FL GATE VALVE (SEE DETAIL DT-6) 250 psi
6	6" ANSI CLASS 125/150 WELDED FLANGE (SEE NOTE #13, THIS SHEET)
7	6" PROCO FITTING, 200 psi (SEE NOTE #13, THIS SHEET)
8	6" MJ FLANGE ADAPTER, FBE-COATED WITH SS 304 BOLTS, MEGAFLANGE SERIES 2100, 235 psi, OAE
9	6" MJ x MJ 90° BEND, D.I. 350 psi
10	4" DUCTILE IRON PIPE, 350 psi
11	4" PVC DR18 PIPE
12	4" MJ x MJ TEE, D.I. 350 psi
13	4" MJ x MJ 90° ELL, D.I. 350 psi
14	4" MJ x MJ SLEEVE, D.I. 350 psi
15	6" x 4" FL x FL REDUCER, D.I., 350 psi
16	4" GATE VALVE, FL x MJ, 350 psi (SEE TYPICAL GATE VALVE DETAIL, SHT. DT-6)
18	THRUST BLOCK (SEE DETAIL DT-3)

NOTES:

1. PROVIDE COMPACTION AND FILL REQUIREMENTS FOR BUILDING AND TANK SUB GRADE AND SITE GRADING IN ACCORDANCE WITH GEOTECHNICAL REPORT.
2. DO NOT INSTALL PIPE WITH ANY HIGH POINTS WITHOUT AN APPROVED AIR VALVE.
3. ALL PIPE, FITTINGS, VALVES AND APPURTENANCES SHALL BE RATED TO AT LEAST 235 psi., UNLESS OTHERWISE NOTED.
4. ALL BURIED PIPING WITHIN 5 FEET OF BUILDING FOUNDATIONS SHALL BE PRESSURE TESTED PRIOR TO POURING FOUNDATION.
5. ALL BURIED DUCTILE IRON PIPE AND FITTINGS SHALL BE DOUBLE-WRAPPED IN POLYETHYLENE, PER SPECIFICATIONS. INNER JACKET SHALL BE V-BIO ENHANCED, MIN. 8-MIL. OUTER JACKET SHALL BE STANDARD PE, MIN. 8-MIL.
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. FLANGE LOCATION AND ELEVATION ARE APPROXIMATE. CONTRACTOR WHOLLY RESPONSIBLE TO VERIFY LOCATION AND ELEVATION OF ALL FLANGE CONNECTIONS TO SURGE TANK AND COORDINATE WITH MATERIAL SUPPLIERS PRIOR TO INSTALLATION. CONTRACTOR WHOLLY RESPONSIBLE TO ALIGN FOUNDATIONS, PIPING INLETS/OUTLETS AND DRAINS WITH ACTUAL SURGE TANK LAYOUT IN FIELD.
8. ALL PRESSURE BEARING PIPES WITHIN SITE SHALL BE FULLY RESTRAINED. REFER TO DETAIL, SHEET DT-3.
9. CONTRACTOR RESPONSIBLE TO VERIFY AND ALIGN ACTUAL FOUNDATION DIMENSIONS AND LOCATIONS OF PIPING INLETS, OUTLETS AND DRAINS IN THE FIELD AND COORDINATE WITH SURGE TANK MANUFACTURERS PRIOR TO CONSTRUCTION. CENTER FLOOR DRAINS UNDER PIPE OUTLETS.
10. FIELD LOCATE CONDUITS PER REVIEW WITH ELECTRICIAN.
11. INSTALL FLANGE ISOLATION KITS W/ BOLT ISOLATING SLEEVES BETWEEN THE SURGE TANK RISER PIPE FLANGE AND PROCO FITTING.
12. PROCO JOINT COMPRESSION SHALL BE WITHIN MANUFACTURER'S RECOMMENDED TOLERANCES. DO NOT ALLOW BOLTS TO MAKE CONTACT WITH RUBBER JOINT. FIELD VERIFY CONTROL BOLT LENGTHS BEFORE FOUNDATION CONSTRUCTION.
13. INSTALL TEMPORARY 6 INCH ANSI CLASS 125/150 BLIND FLANGE PRIOR TO FILLING AND FLUSHING PIPELINE. FLUSH LINE FROM STATION 404+57.00 TO STATION 451+61 WITH BLIND FLANGE IN PLACE. COMPLETE HYDROSTATIC TESTING OF PIPING UNDERNEATH AND WITHIN SURGE TANK BUILDING PRIOR TO REMOVING BLIND FLANGE. REMOVE BLIND FLANGE AND INSTALL 6 INCH PROCO FITTING AFTER THIS SECTION OF LINE FLUSHING AND HYDROSTATIC PRESSURE TESTING IS COMPLETE, BUT PRIOR TO AIR CHARGING SURGE TANK. DO NOT INSTALL PROCO FITTING UNTIL LINE FLUSHING FROM STATION 404+57.00 TO STATION 451+61 IS COMPLETE. DO NOT AIR CHARGE SURGE TANK UNTIL PROCO FITTING IS INSTALLED. DO NOT OPERATE THE PROJECT OR FLUSH BEYOND THE FIRST FLUSH VALVE UNTIL SURGE TANK IS STARTED UP AND OPERATIONAL.
14. ALL DRAINS SHALL HAVE REMOVABLE GRATES.



SURGE TANK PIPING ELEVATION

Client: The Navajo Nation

Location: Coyote Canyon, NM

90% REVIEW

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2/2022

Designed TTT

Drawn MvH/AaV

Checked JMG

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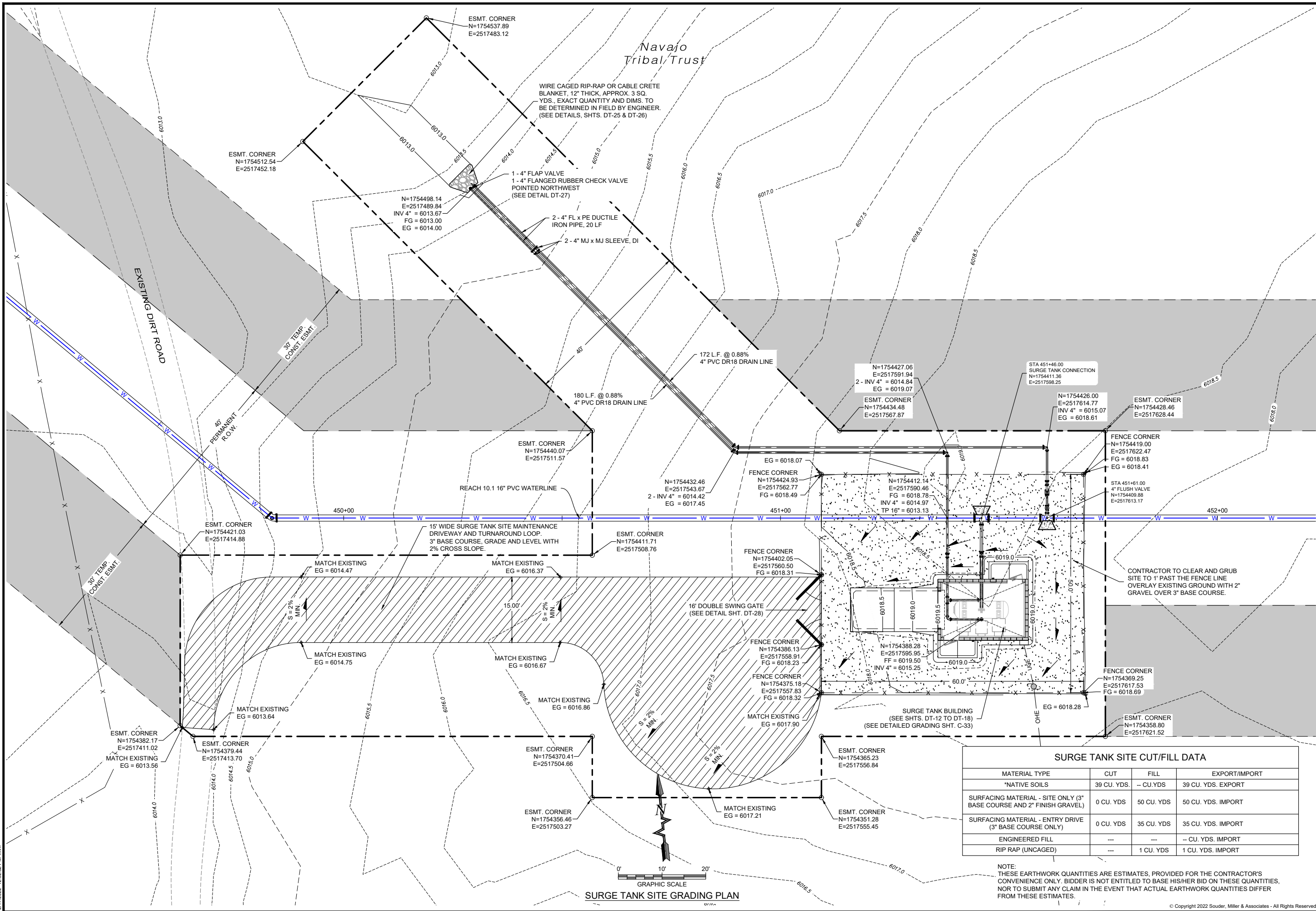
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SURGE TANK SITE CUT/FILL DATA			
MATERIAL TYPE	CUT	FILL	EXPORT/IMPORT
*NATIVE SOILS	39 CU. YDS.	-- CU.YDS	39 CU. YDS. EXPORT
SURFACING MATERIAL - SITE ONLY (3" BASE COURSE AND 2" FINISH GRAVEL)	0 CU. YDS	50 CU. YDS	50 CU. YDS. IMPORT
SURFACING MATERIAL - ENTRY DRIVE (3" BASE COURSE ONLY)	0 CU. YDS	35 CU. YDS	35 CU. YDS. IMPORT
ENGINEERED FILL	---	---	-- CU. YDS. IMPORT
RIP RAP (UNCAGED)	---	1 CU. YDS	1 CU. YDS. IMPORT

NOTE:
THESE EARTHWORK QUANTITIES ARE ESTIMATES, PROVIDED FOR THE CONTRACTOR'S CONVENIENCE ONLY. BIDDER IS NOT ENTITLED TO BASE HIS/HER BID ON THESE QUANTITIES, NOR TO SUBMIT ANY CLAIM IN THE EVENT THAT ACTUAL EARTHWORK QUANTITIES DIFFER FROM THESE ESTIMATES.

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Location: Coyote Canyon, NM

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Revision
Date
Description

By
CHKD

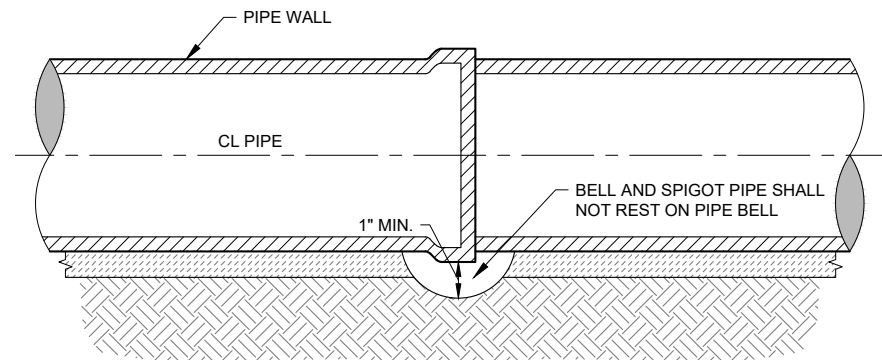


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NOTES:

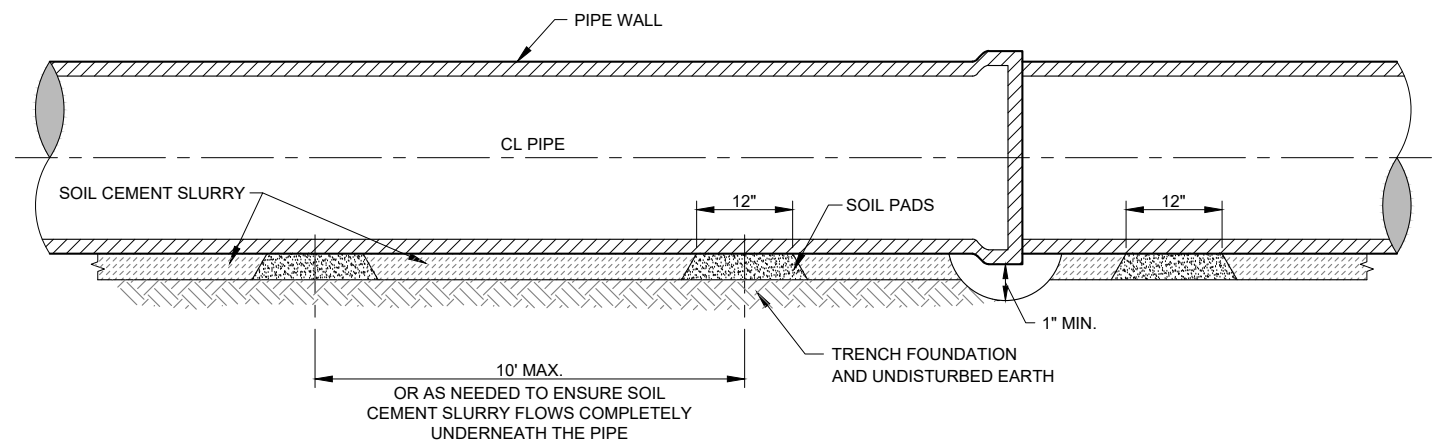
1. SOIL CEMENT SLURRY MAY BE USED IN LIEU OF COMPACTED SELECT MATERIAL AT CONTRACTOR'S OPTION AND EXPENSE.
2. ANY SECTION OF PIPE EMBEDDED IN COMPACTED SELECT MATERIAL THAT FAILS TO MEET SOIL CLASSIFICATION AND/OR COMPACTION REQUIREMENTS SHALL BE DUG UP, RE-BURIED, RE-COMPACTED AND RE-TESTED AT CONTRACTOR'S 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".



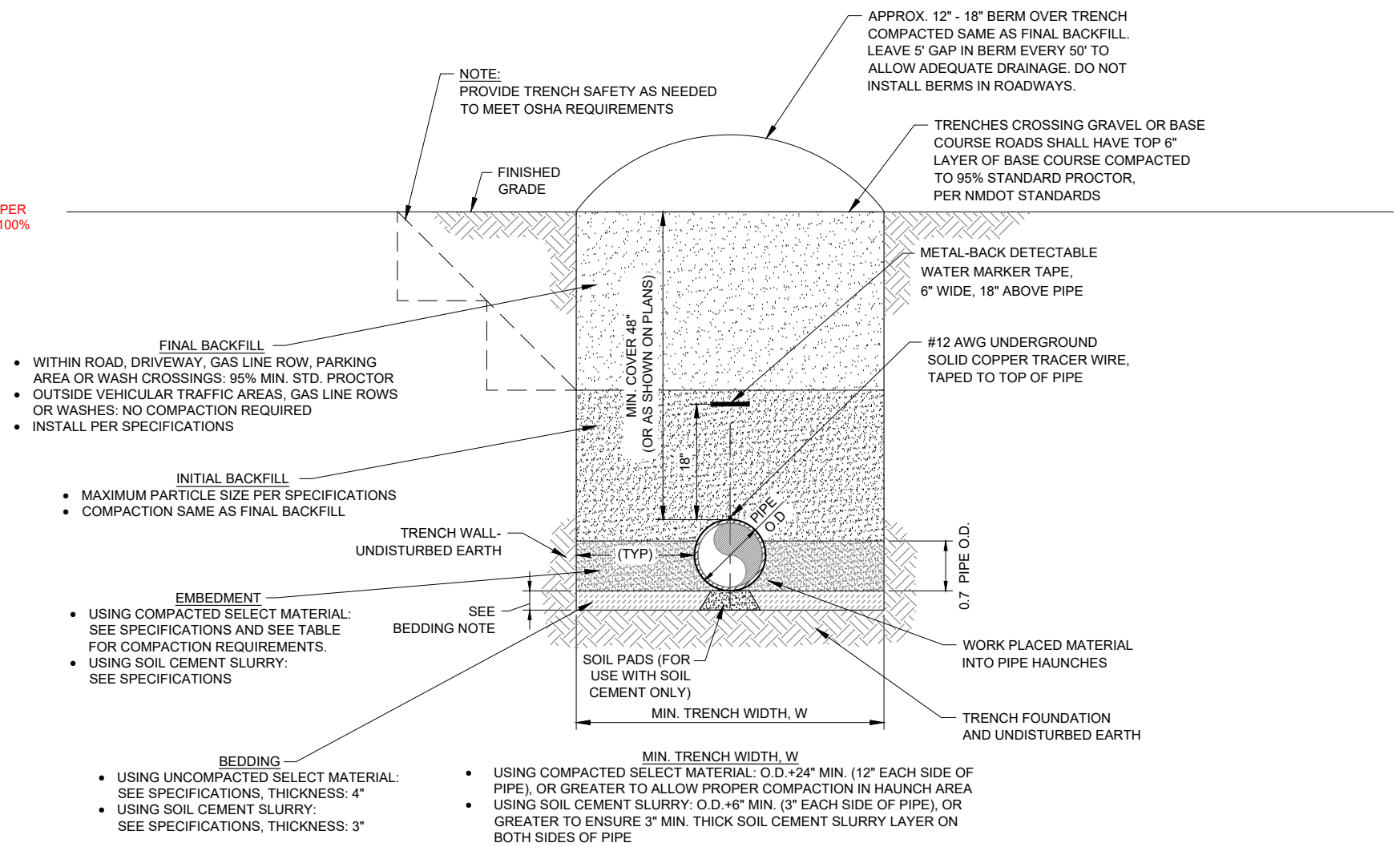
TYPICAL BELL HOLE DETAIL
NOT TO SCALE

MINIMUM PERCENT COMPACTION FOR EMBEDMENT OUTSIDE TRAFFIC AREAS, GAS LINES ROW, WASH CROSSINGS	
CLEAN COARSE-GRAINED SOILS	
	16" 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	
	16" Pipe
Cover Depth	Minimum Compaction
4' to 14'	85%
14' to 20'	90%
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
NOT TO SCALE



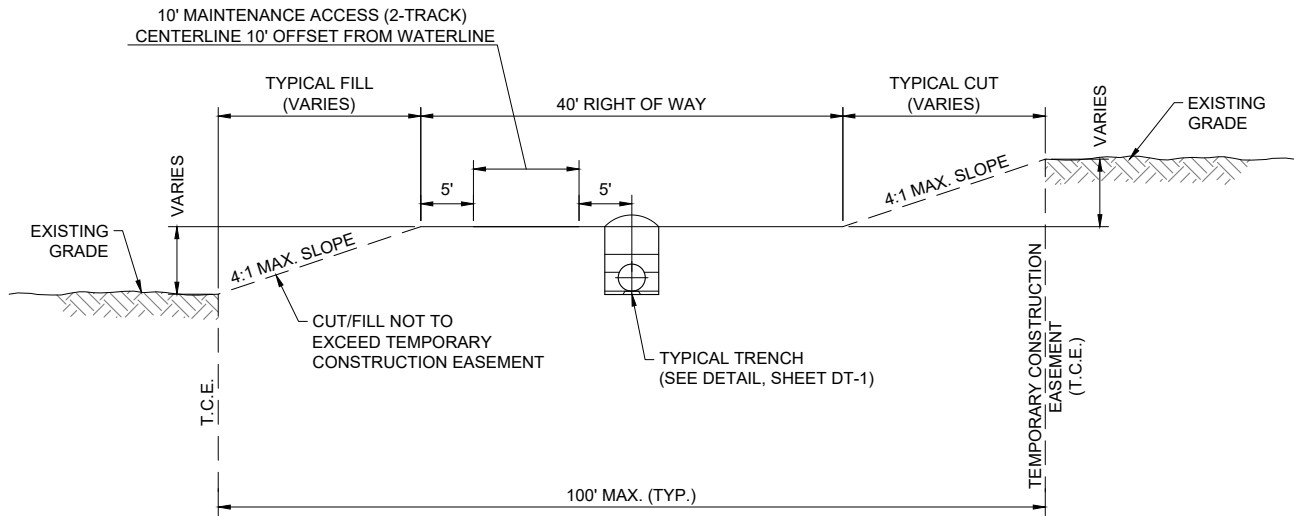
TYPICAL TRENCH DETAIL
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WILL UPDATE PER
GEOTECH AT 100%

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Revision	Date	Description	By	Chkd			
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Client: The Navajo Nation Location: Coyote Canyon, NM TRENCH DETAILS NAVAJO GALLUP WATER SUPPLY PROJECT BEACON BISTI N9 - REACH 10.1 MCKINLEY COUNTY, NEW MEXICO							
90% REVIEW DRAFT							
PRELIMINARY NOT FOR CONSTRUCTION 2/2022							
<table><tr><td>Designed TTT</td><td>Drawn AAV</td><td>Checked JMG</td></tr></table>					Designed TTT	Drawn AAV	Checked JMG
Designed TTT	Drawn AAV	Checked JMG					
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Sheet: DT-1							

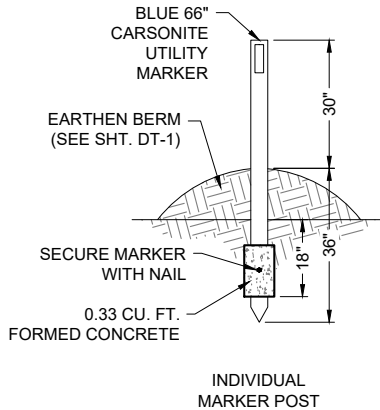
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TYPICAL PIPELINE ROW FINISHED GRADING DETAIL
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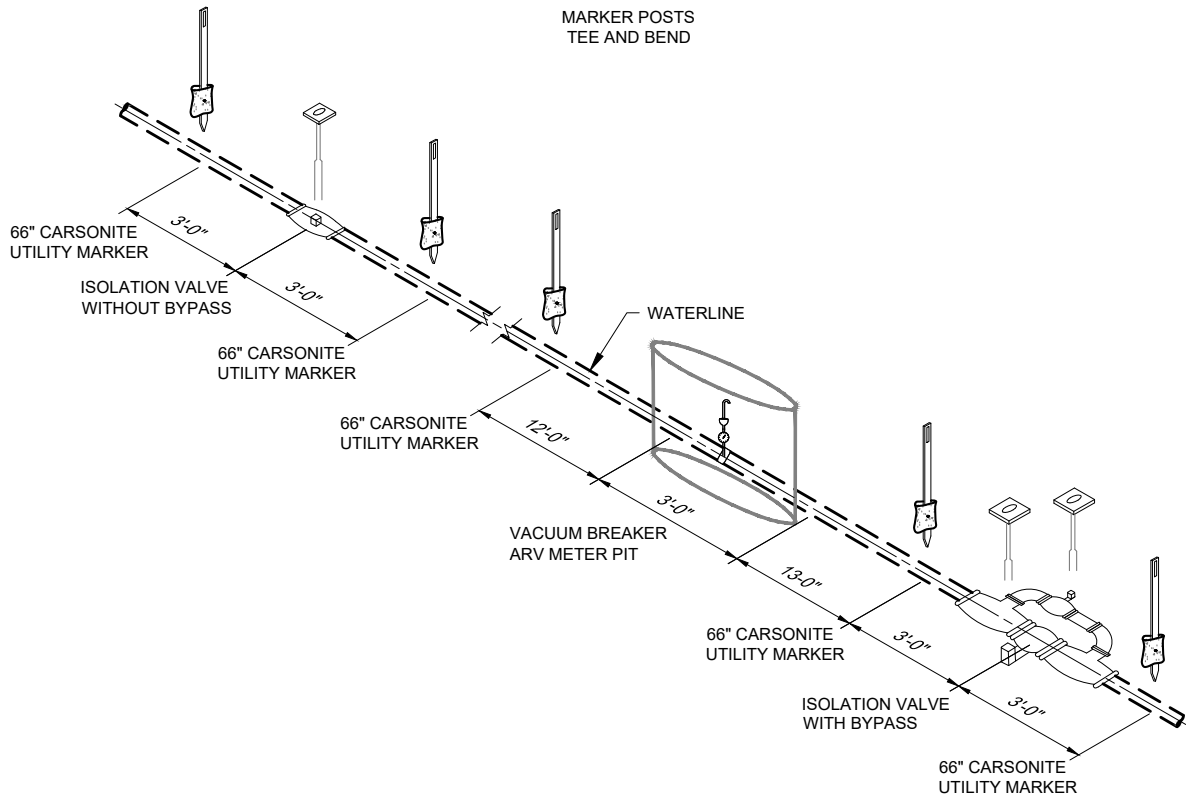
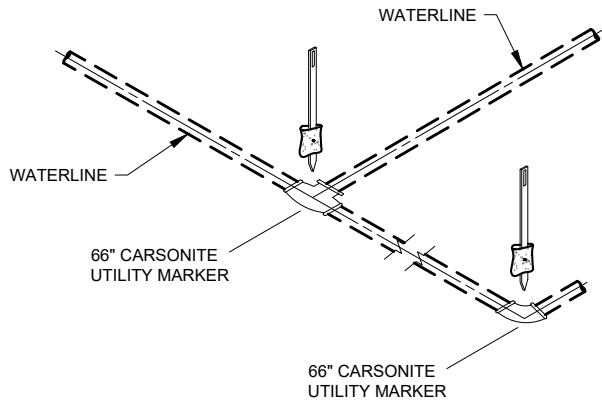
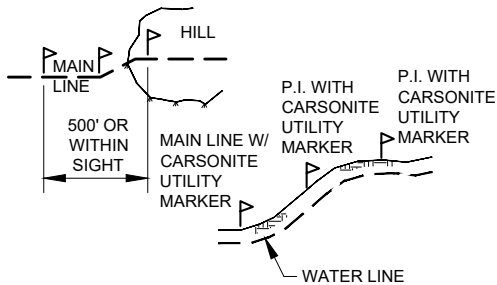
NOTES:

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.



NOTE:

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 WITHOUT BYPASS,
VACUUM BREAKER / ARV METER PIT
& BUTTERFLY VALVE WITH BYPASS

TYPICAL MARKER POSTS
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Client: The Navajo Nation
Location: Coyote Canyon, NM
MISCELLANEOUS CONSTRUCTION DETAILS
NAVAJO GALLUP WATER SUPPLY PROJECT
BEACON BISTI N9 - REACH 10.1
MCKINLEY COUNTY, NEW MEXICO

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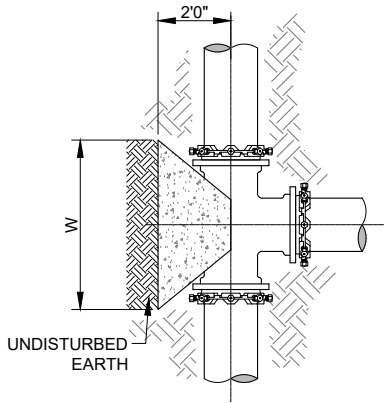
P:\6-Beacon Bluff N9 Water Line (6922268)\CAD\Construction Plans\Reach 10.1 Block and Anchor Details.dwg
2/17/2022 12:04:06 PM mrvh

Thrust Block Dimension Schedule

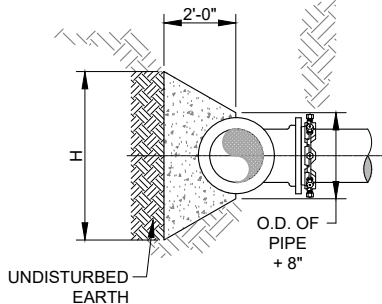
Pipe	Fitting	Required Thrust Block Area (ft ²)	Design Thrust Block Size (H x W x T) (ft)
16"	Flush Valve (4" Tee)	3.0	2' x 2' x 2'
16"	Reach 9 Tie In (Tee)	37.3	6' x 6' x 2'
6"	Surge Tank Connection Line (Tee)	5.9	2.5' x 2.5' x 2'
6"	Surge Tank Connection Line (90° Ell)	8.4	3' x 3' x 2'

GENERAL NOTES

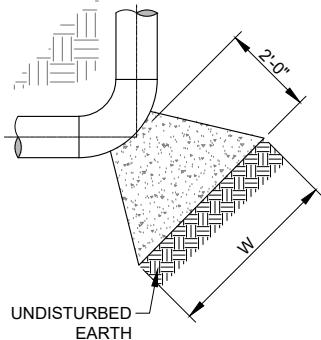
- ASSUMED SOIL BEARING CAPACITY 1,500 psf.
- ALL CONCRETE SHALL BE 3000 psi, MINIMUM COMPRESSIVE STRENGTH IN 28 DAYS



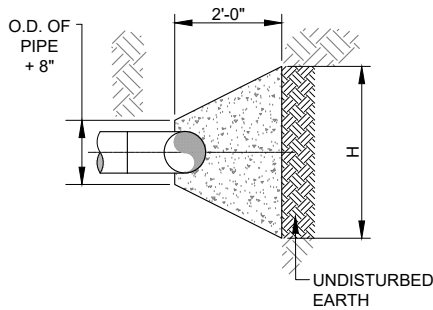
PLAN VIEW
CONCRETE BLOCKING
FOR TEE



ELEVATION VIEW
CONCRETE BLOCKING
FOR TEE



PLAN VIEW
CONCRETE BLOCKING
FOR ELBOW



ELEVATION VIEW
CONCRETE BLOCKING
FOR ELBOW

THRUST BLOCK DETAIL
NOT TO SCALE

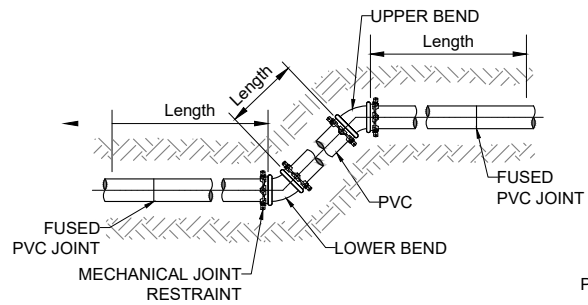
Minimum Required Restraint Lengths for Individual Fittings

Reach 10.1 - 16" DR18 PVC				
Fitting	Pipe Size	Pipe DR	Test Pressure (psi)	Design Restraint Length (ft)
Isolation Valve/ Dead End	16	18	235	160
Isolation Valve/ Dead End	8	18	235	90
From End of Casing	16	18	235	100
Horizontal Bend or Sweep				
90°	16	18	235	60
45°	16	18	235	25
22.5°	16	18	235	20
11.25°	16	18	235	20
Vertical Bend or Sweep ¹				
45°, upper bend	16	18	235	70
45°, lower bend	16	18	235	20
22.5°, upper bend	16	18	235	35
22.5°, lower bend	16	18	235	20
11.25°, upper bend	16	18	235	20
11.25°, lower bend	16	18	235	20
Transition				
Reducing Tee	48 x 16	18	235	20
Reducing Tee	16 x 6	18	235	20
Reducer	16 x 8	18	235	120

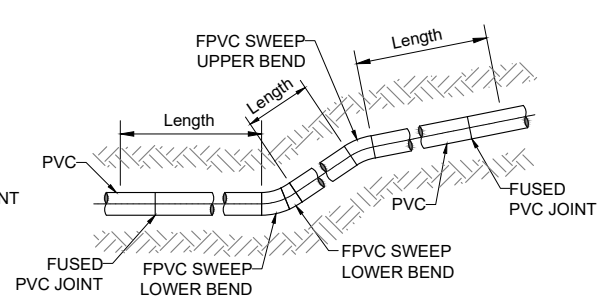
¹ Gives the required restraint length on each side of the specified bend, using a low side depth (from ground surface to top of the lower pipe) of 6-ft.

NOTES:

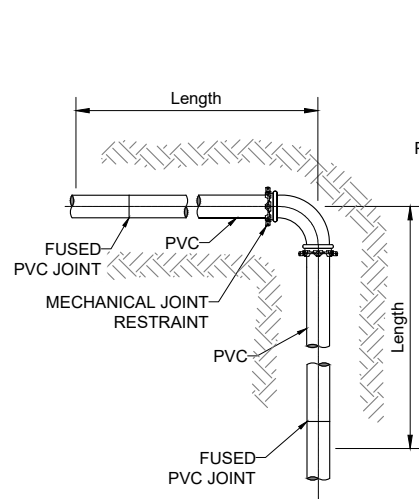
- MECHANICAL JOINT RESTRAINTS SHALL BE RATED TO PIPE PRESSURE RATINGS.
- MECHANICAL JOINT RESTRAINTS INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.
- ALL BURIED METALLIC WATER BEARING COMPONENTS SHALL BE COATED WITH FUSION BONDED EPOXY, INTERIOR AND EXTERIOR.
- APPLY CATHODIC PROTECTION TO ALL BURIED METALLIC COMPONENTS LOCATED WITHIN CORROSIVE SOILS ZONES, AS DESIGNATED IN PLANS AND/OR SPECIFICATIONS.
- ALL RESTRAINED PIPE JOINTS SHALL BE FUSIBLE PVC. NO BELL HARNESS RESTRAINTS SHALL BE ALLOWED.
- ALL SITE PIPING SHALL BE FULLY RESTRAINED WITH FUSIBLE PVC EXCLUDING DRAIN LINES.
- 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.
- FOR ANY FITTING OR APPURTENANCE NOT EXPRESSLY CALLED OUT IN PLANS, REFER TO THIS SHEET FOR RESTRAINT LENGTH REQUIREMENTS.
- 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.
- 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.



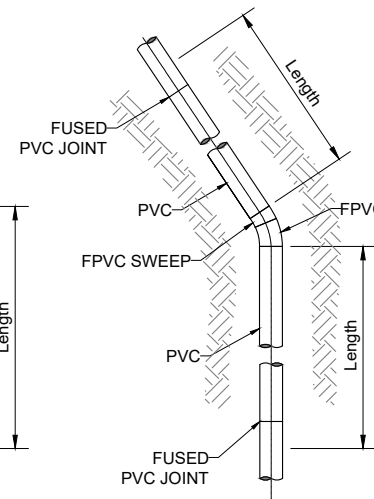
ELEVATION VIEW
MECHANICAL JOINT RESTRAINT FOR VERTICAL OFFSET



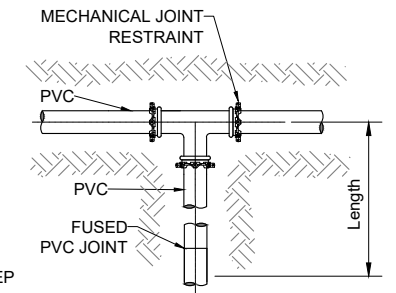
ELEVATION VIEW
FUSED JOINT RESTRAINT FOR VERTICAL SWEEP



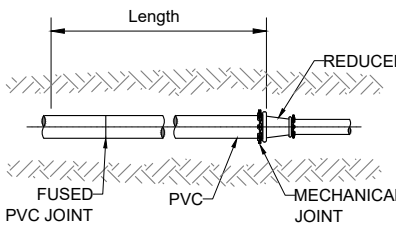
PLAN VIEW
MECHANICAL JOINT RESTRAINT
FOR HORIZONTAL BEND



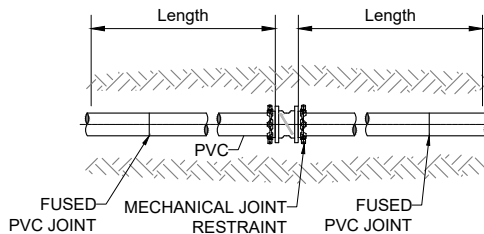
PLAN VIEW
FUSED JOINT RESTRAINT
FOR HORIZONTAL SWEEP



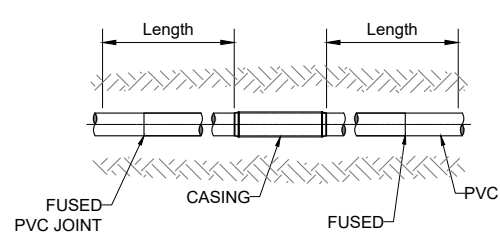
PLAN VIEW
MECHANICAL JOINT RESTRAINT
FOR TEE



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
NOT TO SCALE

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Client: The Navajo Nation
Location: Coyote Canyon, NM

THRUST BLOCK & JOINT RESTRAINT DETAILS
NAVAJO GALLUP WATER SUPPLY PROJECT
BEACON BIST N9 - REACH 10.1
MCKINLEY COUNTY, NEW MEXICO

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	AAV	JMG

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Client: The Navajo Nation
Location: Coyote Canyon, NM

CASED ROAD CROSSING DETAILS
NAVAJO GALLUP WATER SUPPLY PROJECT
BEACON BISTI N9 - REACH 10.1
MCKINLEY COUNTY, NEW MEXICO

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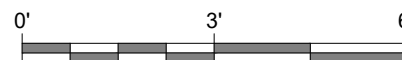
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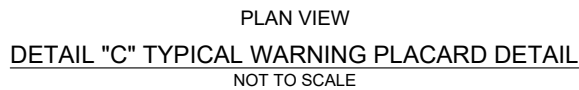
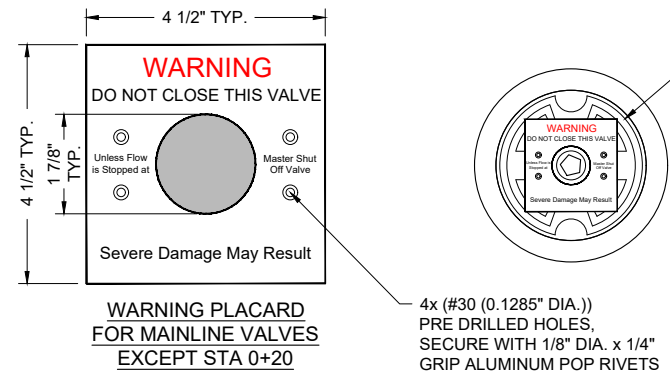
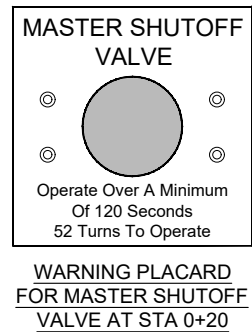
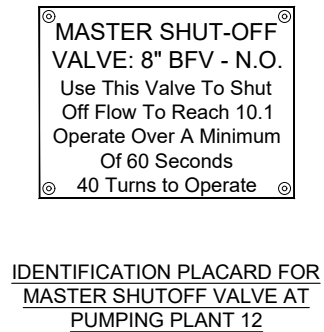
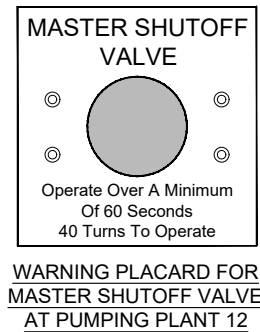
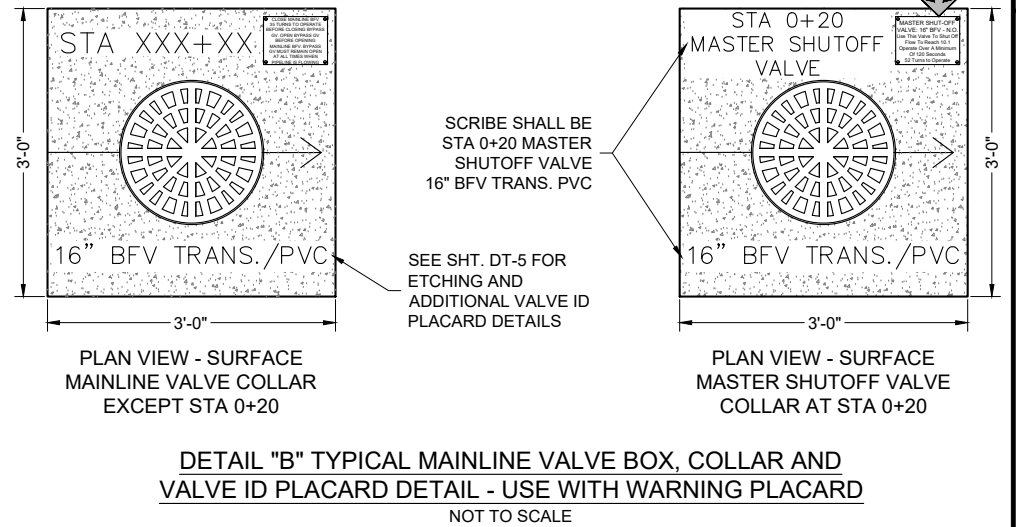
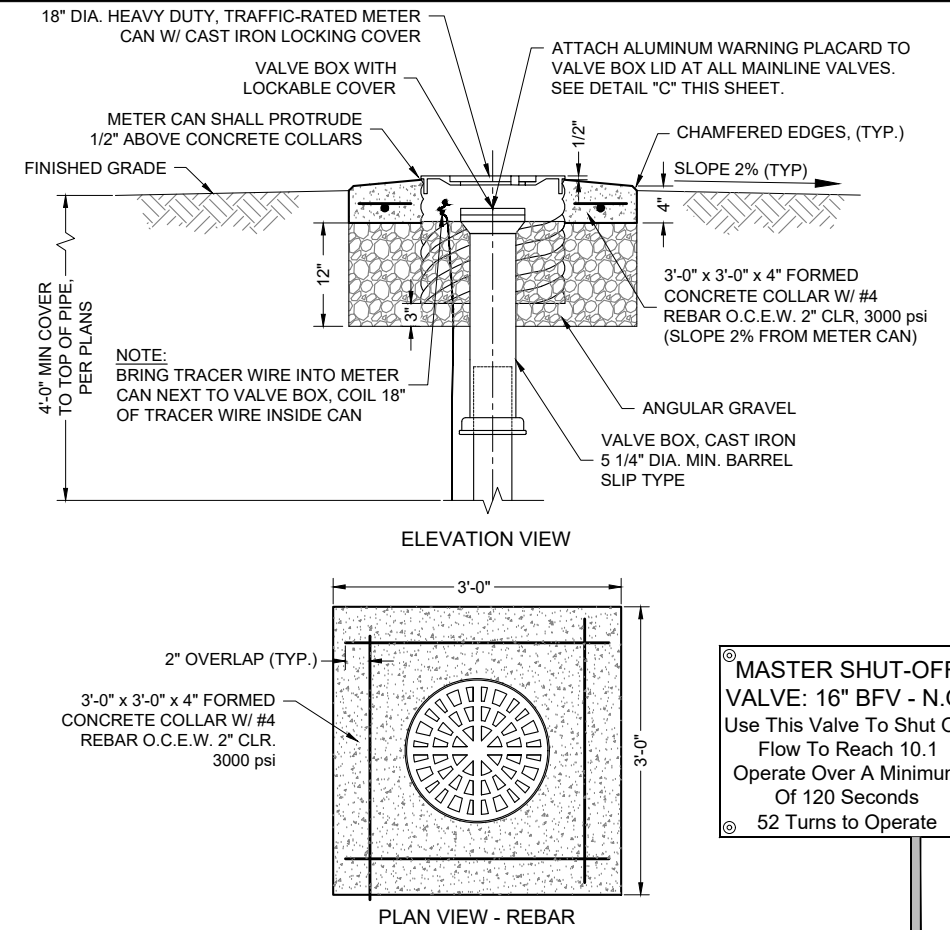
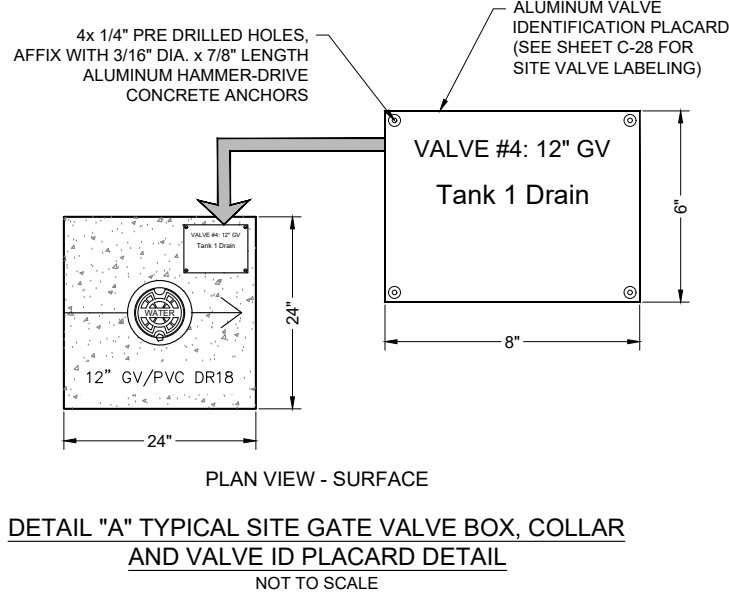
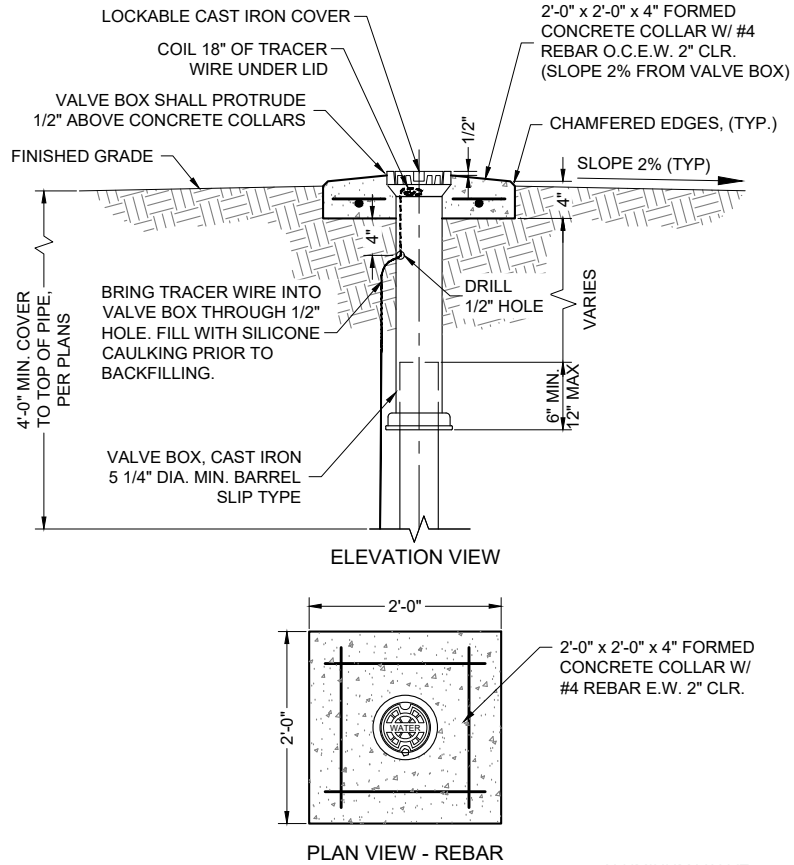
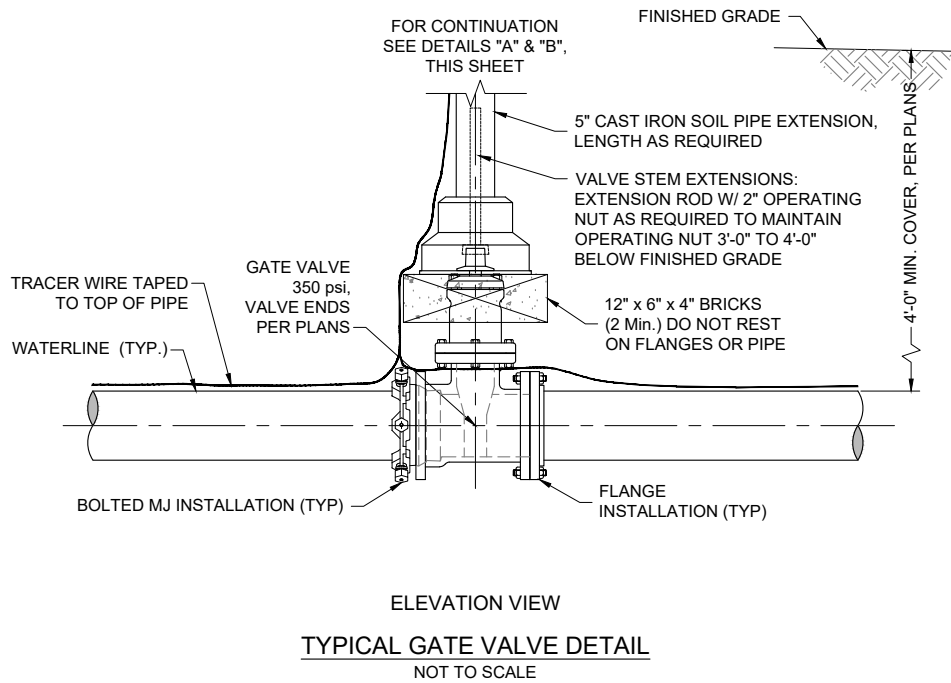
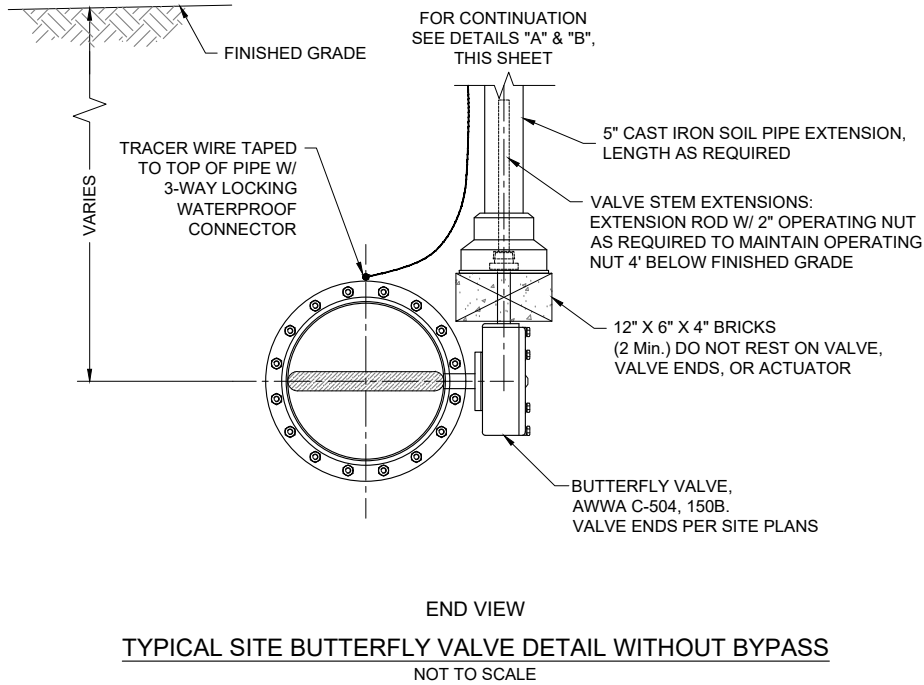
Item No.	Description
1	16" FL x FL BUTTERFLY VALVE W/ MANUAL BURIED SERVICE ACTUATOR AWWA C504, 250B, PER PLANS
2	4" FL x MJ GATE VALVE WITH VALVE BOX, 350 psi
3	16" x 6" D.I. REDUCING TEE, FLANGED, 250 psi, PER PLANS
4	16" MJ FLANGE ADAPTER, FBE COATED, W/ SS 304 BOLTS, MEGAFLANGE SERIES 2100, OAE, 235 psi
5	9" O.D. STAINLESS STEEL SPACER TO MATCH 4" FLANGE, 3/8" THICK
6	9" O.D. STAINLESS STEEL ORIFICE PLATE TO MATCH 4" FLANGE (SEE DETAIL / TABLE THIS SHEET)
7	4" D.I. 90° ELL, FLANGED, 250 psi
8	4" D.I. SPOOL, FL x PLAIN END, 250 psi
9	18" DIA. HEAVY DUTY, TRAFFIC-RATED METER CAN (PAINTED BLUE) W/ LOCKING COVER AND FORMED CONCRETE COLLAR, (3000 psi W/ #4 REBAR)
10	12" x 6" x 4" BRICKS, ORIENTATION PER PLAN VIEW
11	CAST IRON SLIP TYPE VALVE BOX WITH LOCKABLE COVER
12	6" x 4" D.I. REDUCER, FLANGED, 250 psi,

1. ALL BURIED METALLIC PIPE, VALVES AND FITTINGS SHALL BE COATED WITH FUSION BONDED EPOXY, INTERIOR AND EXTERIOR. ALL BURIED METALLIC PIPE SHALL ALSO BE COLD-APPLIED TAPE-COATED, PER SPECIFICATIONS.
2. APPLY CATHODIC PROTECTION TO ALL BURIED METALLIC PRESSURE-BEARING COMPONENTS LOCATED WITHIN CORROSIVE SOIL ZONES, AS DESIGNATED IN THE PLANS AND/OR SPECIFICATIONS.
3. FLANGES SHALL BE ANSI CLASS 125 (IRON).
4. CONTRACTOR SHALL SCRIBE ALL CONCRETE COLLARS PER DETAIL THIS SHEET. CONCRETE SHALL BE SCRIBED PRIOR TO CURING, OR ETCHED AFTER CURING WITH 4" GRINDER.
5. CONTRACTOR SHALL LEAVE A 3/4" MIN. TO 1" MAX. GAP BETWEEN PVC PIPE END AND FLANGE FACE INSIDE MJ FLANGE ADAPTER, TO FACILITATE FUTURE DISASSEMBLY.
6. ALL MATERIALS RATED TO AT LEAST 235 psi UNLESS OTHERWISE NOTED.

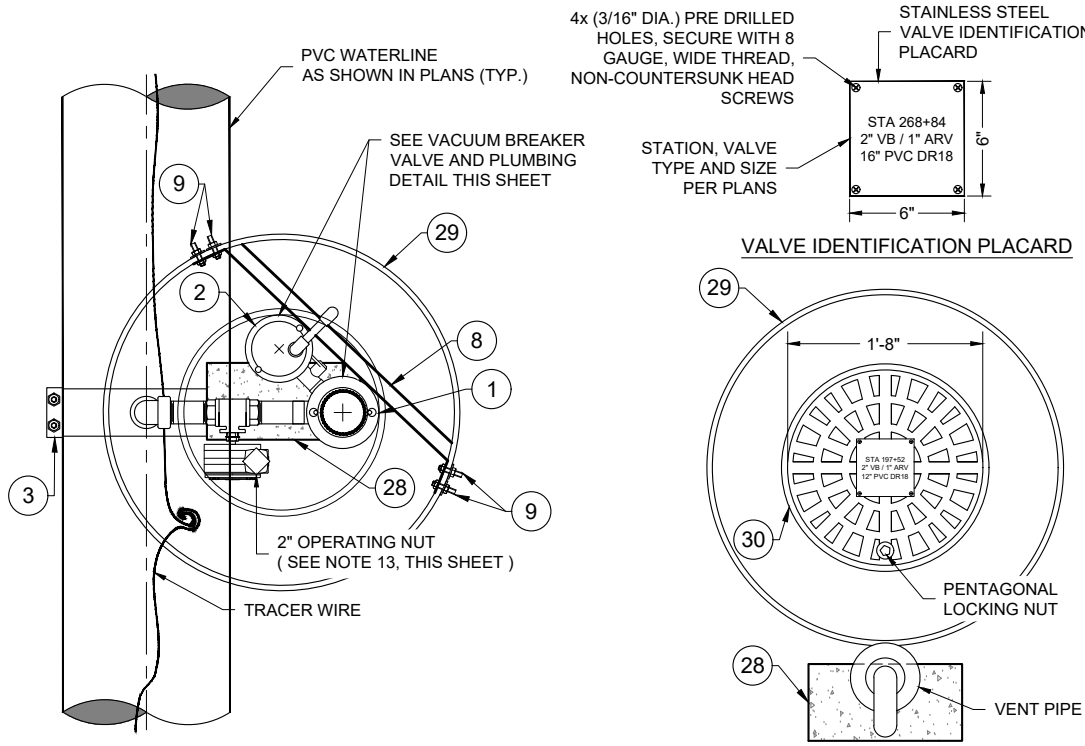


Project No:	6922268
Sheet:	DT-5

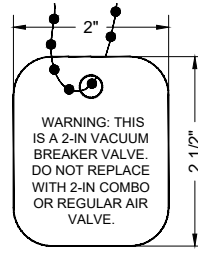
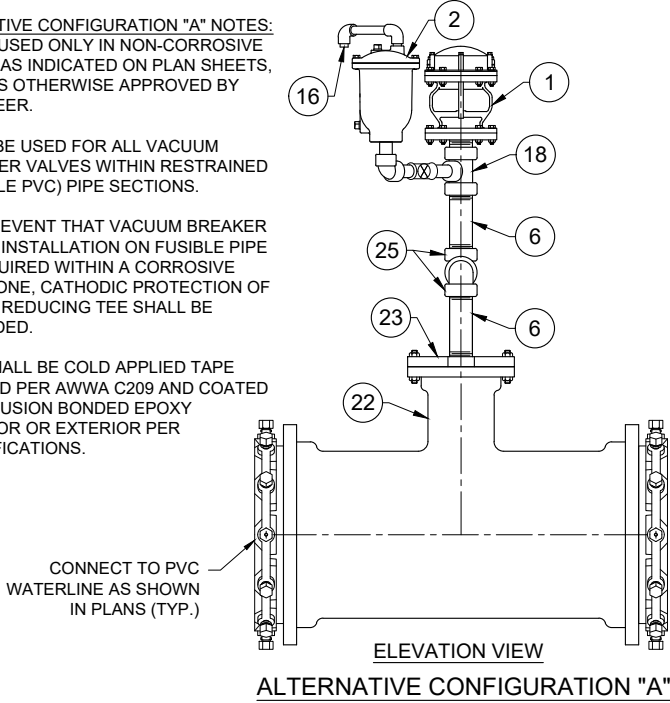
- NOTES:
1. CONTRACTOR SHALL SCRIBE ALL CONCRETE VALVE COLLARS, PER DETAILS "A" & "B" THIS SHEET. CONCRETE SHALL BE SCRIBED PRIOR TO CURING OR ETCHED AFTER CURING WITH 4" GRINDER.
 2. AFFIX WARNING PLACARD TO VALVE BOX COVER INSIDE METER CAN FOR ALL MAINLINE VALVES.
 3. AFFIX ALUMINUM VALVE IDENTIFICATION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



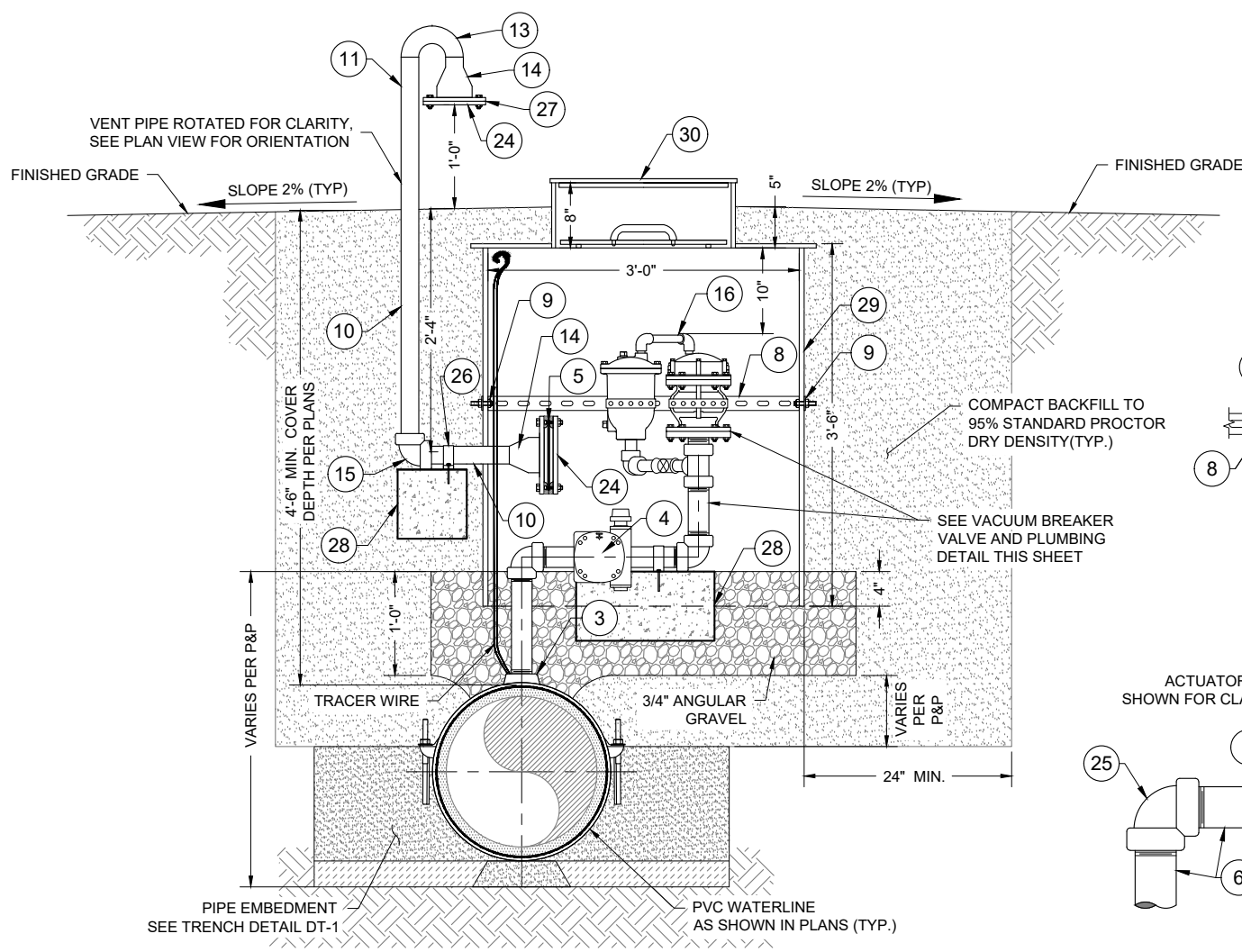
Client: The Navajo Nation	Location: Coyote Canyon, NM	90% REVIEW DRAFT
BUTTERFLY AND GATE VALVE DETAILS NAVAJO GALLUP WATER SUPPLY PROJECT BEACON BISTI N9 - REACH 10.1 MCKINLEY COUNTY, NEW MEXICO		PRELIMINARY NOT FOR CONSTRUCTION 2/2022
Designed TTT	Drawn AAV	Checked JMG
THIS DRAWING IS INCOMPLETE AND NOT TO BE USED FOR CONSTRUCTION UNLESS IT IS STAMPED, SIGNED AND DATED		
811 Know what's BELOW. CALL before you dig.		
Date: February 2022	Scale: Horiz: N/A Vert: N/A	Project No: 6922268
Sheet: DT-6		



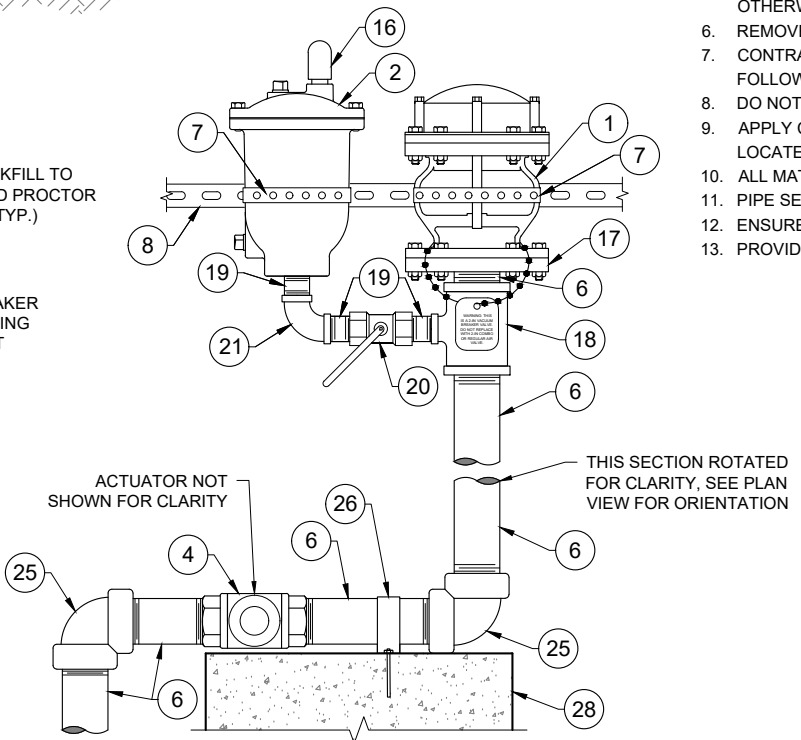
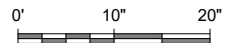
- ALTERNATIVE CONFIGURATION "A" NOTES:
1. TO BE USED ONLY IN NON-CORROSIVE SOILS, AS INDICATED ON PLAN SHEETS, UNLESS OTHERWISE APPROVED BY ENGINEER.
 2. MUST BE USED FOR ALL VACUUM BREAKER VALVES WITHIN RESTRAINED (FUSIBLE PVC) PIPE SECTIONS.
 3. IN THE EVENT THAT VACUUM BREAKER VALVE INSTALLATION ON 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 OR EXTERIOR PER SPECIFICATIONS.



VALVE WARNING TAG DETAIL
(HANG FROM 2" VACUUM BREAKER VALVE)



ELEVATION VIEW
VACUUM BREAKER VALVE DETAIL

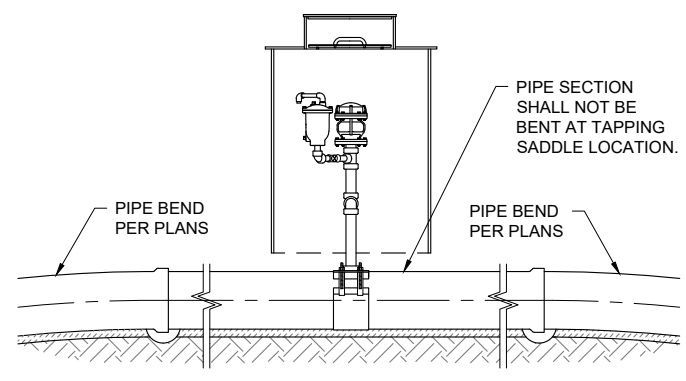


ELEVATION VIEW
VACUUM BREAKER VALVE AND PLUMBING DETAIL

N.T.S.

KEYED NOTES - 2" VACUUM BREAKER WITH 1" AIR RELEASE VALVE	
Item No.	Description
1	2" VALMATIC MODEL NO. 1852VB.3XFSVH VACUUM BREAKER VALVE W/ SCREENED HOOD, ANSI CLASS 250 FLANGE, 400 psi WP
2	1" VALMATIC MODEL NO. 38HPDISVH AIR RELEASE VALVE, 500 psi WP
3	16" x 2" 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
4	2" BALL VALVE, SS 304, STANDARD PORT, NPT, W/ AUMA WORM GEARBOX W/ SQUARE OPERATING NUT, 1500 psi
5	4" FREEZE PREVENTION DRAFT DAMPENER. VALMATIC FROSTSAFE MODEL #1504, OAE
6	2" NIPPLE, SS 304, NPT
7	STAINLESS STEEL PERFORATED METAL HANGER STRAP
8	1 5/8" GALVANIZED UNI-STRUT (ADJUST AS NEEDED TO FIT BOTH VALVES AND PIPING)
9	2" SS 304 ANCHOR BOLTS, NUTS AND FENDER WASHERS (2x EACH SIDE)
10	2" STD. GALVANIZED IRON PIPE, THREADED END (PIPE EXTERIOR COLD-APPLIED TAPE COATED)
11	2" STD. GALVANIZED IRON PIPE (PIPE EXTERIOR PAINTED BLUE)
12	NOT USED
13	2" GALVANIZED IRON LONG RADIUS WELDED RETURN (PIPE EXTERIOR PAINTED BLUE)
14	4" FLANGED x 2" WELDED GALVANIZED IRON REDUCER (PIPE EXTERIOR PAINTED BLUE)
15	2" GALVANIZED IRON 90° ELBOW, THREADED (PIPE EXTERIOR COLD-APPLIED TAPE COATED)
16	1/2" DOWN SPOUT W/ SCREEN, SCHEDULE 80 PVC
17	2" FLANGE (THREADED), ANSI CLASS 300, SS 304, FLAT FACE
18	2" x 2" x 1" REDUCING TEE, SS 304, NPT, SCHEDULE 40
19	1" x 2" LENGTH NIPPLE, SS 304, NPT
20	1" BALL VALVE, SS 304, NPT, 2000 psi
21	1" 90° ELBOW, SS 304, NPT, SCHEDULE 40
22	16" x 16" x 6" MJ x MJ REDUCING TEE, D.I., 350 psi WP
23	6" x 2" TAPPED THREADED MJ PLUG, D.I., 350 psi, FBE COATED
24	4" GALVANIZED IRON COMPANION FLANGE, DRILLED TO FIT
25	2" 90° ELBOW, SS 304, NPT, SCHEDULE 40
26	1" WIDE PIPE STRAP, BOLT TO SUPPORT BLOCK (3" BOLTS)
27	VARMINT SCREEN
28	CONCRETE SUPPORT BLOCK, SOLID 8" x 8" x 16"
29	36" DIA. PLASTIC (METER) PIT WITH REMOVABLE FROST LID
30	20" METER PIT LOCKING COVER(CAST IRON)WITH FROST PROOF INNER LID

- 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. VACUUM BREAKER 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 VACUUM BREAKER METER BOX LIDS, INFORMATION AS FOLLOWS: PIPE STATION, VALVE SIZE, "VB / 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 VACUUM BREAKER INSTALLATION LOCATIONS, SEE DETAIL THIS SHEET.
 12. ENSURE ALL BALL VALVE HANDLES ARE UNIMPEDED THROUGH THEIR FULL RANGE OF MOTION.
 13. PROVIDE MIN. 3" HORIZONTAL CLEARANCE ON ALL SIDES AROUND 2" BALL VALVE OPERATING NUT.



ELEVATION VIEW
PIPE BENDING RESTRICTIONS FOR USE WITH TAPPING SADDLE

N.T.S.

P:\6-Beacon Bisti N9 Water Line (6922268)\CADD\vt\Reach 10.1 Air Valve Details.dwg
2/17/2022 12:04:47 PM aav

By: CHK'd

Description

Revision

Date

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SMA

SOUDER, MILLER & ASSOCIATES

Client: The Navajo Nation

Location: Coyote Canyon, NM

2 INCH VACUUM BREAKER WITH 1 INCH AIR VALVE DETAIL

NAVAJO GALLUP WATER SUPPLY PROJECT

BEACON BISTI N9 - REACH 10.1

MCKINLEY COUNTY, NEW MEXICO

90% REVIEW

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2/2022

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Date: February 2022

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Vert: N/A

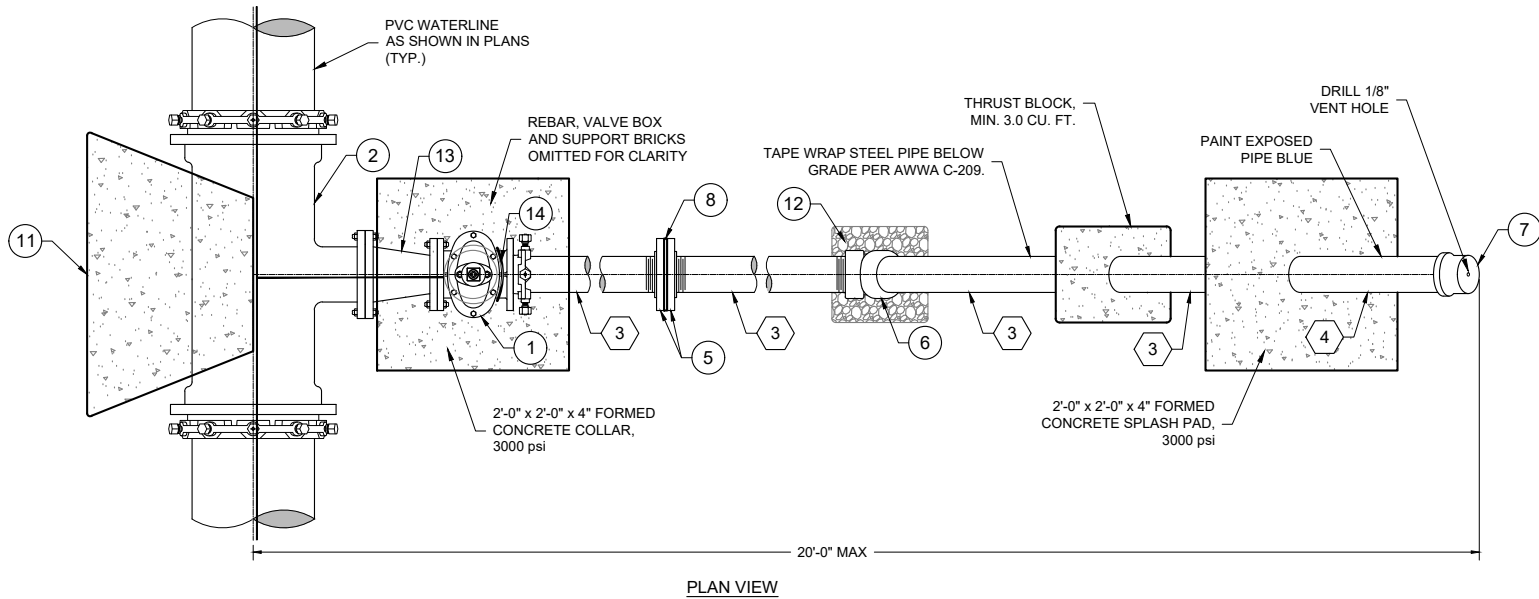
Project No: 6922268

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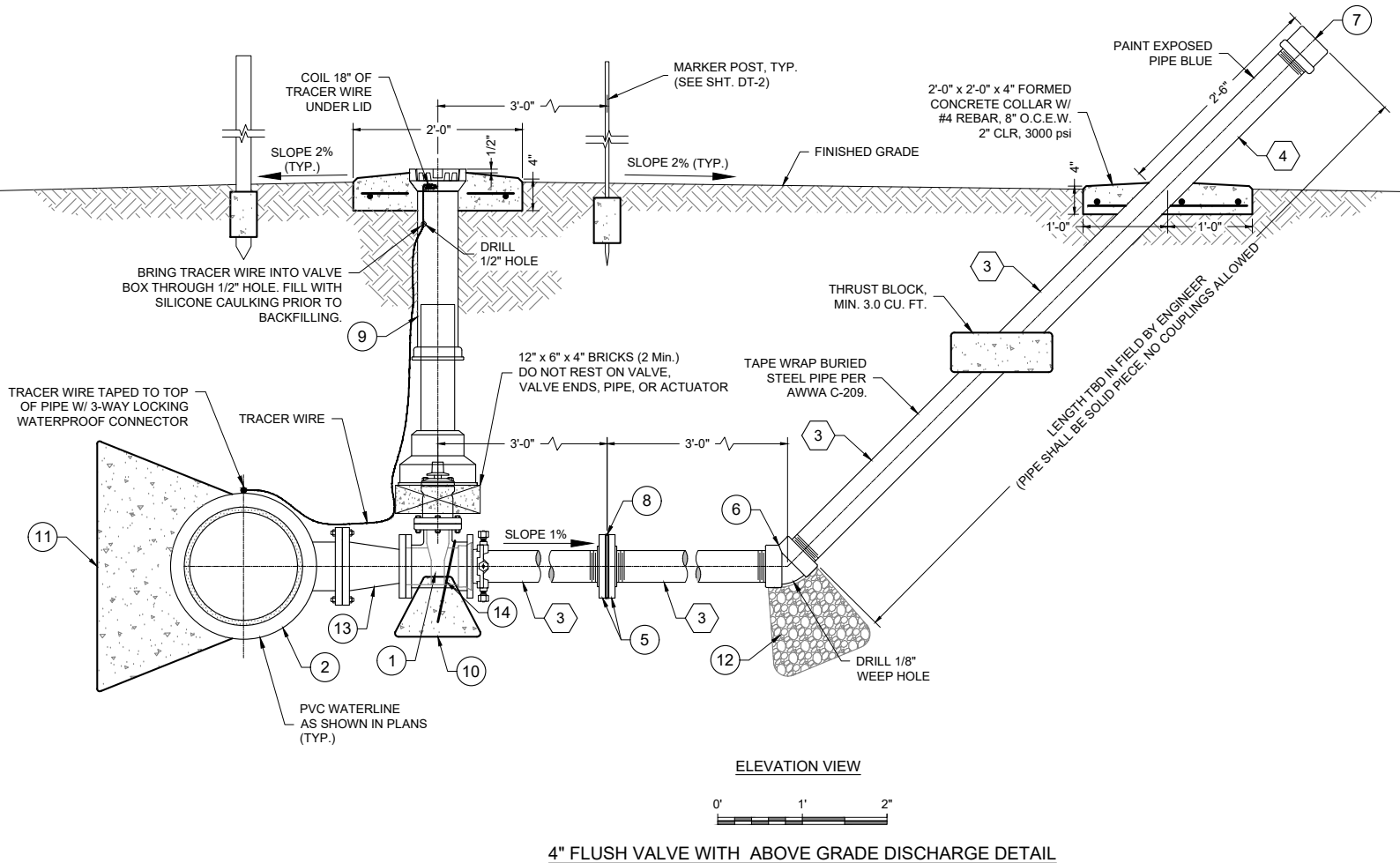
NOTE:
CONCRETE SHALL BE SCRIBED
PRIOR TO CURING OR ETCHED
AFTER CURING WITH A 4" GRINDER.

COLLAR SCRIBING DETAIL
NOT TO SCALE



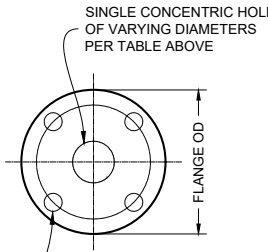
KEYED NOTES - 4" FLUSH VALVE WITH ABOVE GRADE DISCHARGE	
Item No.	DESCRIPTION
1	4" GATE VALVE, FL x MJ, 350 psi (SEE TYPICAL GATE VALVE DETAIL, SHT. DT-6)
2	16" x 6" MJ x FL REDUCING TEE, D.I., 250 psi
3	4" G.I. PIPE, STANDARD WALL, NPT, TAPE COATED BELOW GRADE
4	4" G.I. PIPE, STANDARD WALL, NPT, PAINTED BLUE ABOVE GRADE
5	4" G.I.-HUB, FLAT FACED, COMPANION FLANGE, NPT, SS 304, ANSI CLASS 150
6	4" G.I. 45° ELL, NPT, 300 psi
7	4" G.I. CAP, NPT, 300 psi, W/ 1/8" VENT HOLE
8	3/8" THK. STAINLESS STEEL ORIFICE PLATE, ANSI CLASS 150 DRILLING PATTERN (SEE DETAIL, THIS SHEET)
9	VALVE BOX SLIP TYPE WITH LOCKING CAST IRON COVER (SEE TYPICAL GATE VALVE DETAIL, SHT. DT-6)
10	1'-0" x 1'-0" x 1'-0" CONCRETE BLOCK, 3000 psi
11	THRUST BLOCK (SEE DETAIL DT-3)
12	ROUNDED ROCK (1.5 CU. YD.)
13	6" x 4" FL x FL REDUCER, D.I., 250 psi
14	#4 REBAR RESTRAINT

- NOTES:
- ALL FLANGES SHALL BE ANSI CLASS 125 or 150.
 - 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.
 - ORIENTATION AND LOCATION OF OUTLET TO BE DETERMINED IN FIELD BY ENGINEER.
 - APPLY CATHODIC PROTECTION TO ALL BURIED METALLIC WATER-CARRYING COMPONENTS LOCATED WITHIN CORROSIVE SOIL ZONES, AS DESIGNATED IN THE PLANS AND/OR SPECIFICATIONS.
 - ALL STEEL PIPE AND FITTINGS SHALL BE STANDARD WALL.
 - ALL COMPONENTS SHALL REMAIN WITHIN THE 40' PERMANENT RIGHT-OF-WAY.
 - ALL MATERIALS RATED TO AT LEAST MAINLINE PIPE PRESSURE RATING, UNLESS OTHERWISE NOTED.
 - SEE TABLE FOR ORIFICE PLATE DRILLING AND FLUSH VALVE TYPE REQUIREMENTS.



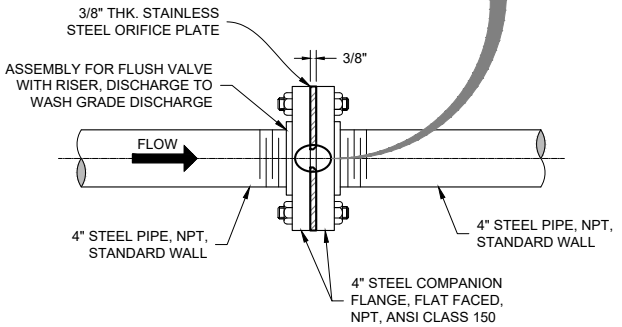
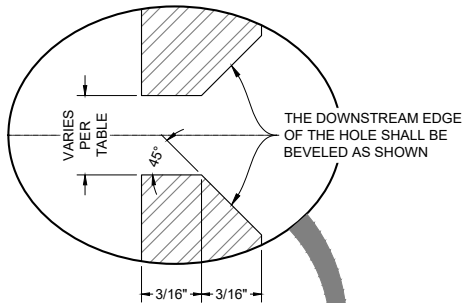
SUMMARY OF FLUSH VALVE ORIFICE PLATE DRILLING		
Station	Elevation	Orifice Plate Hole Ø (in.)
73+50	5975	3.0
179+00	5927	3.0
232+50	5919	3.0
285+50	5903	3.0
371+60	5956	3.0
523+87	6016	3.0

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



FLANGE O.D. x 3/8" THK. STAINLESS STEEL PLATE. DRILLED TO ANSI FLANGE PATTERN, CLASS 150 FOR 4-INCH ORIFICE DIAMETER PER TABLE THIS SHEET.

ORIFICE PLATE
NOT TO SCALE

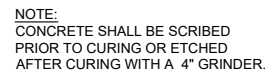


4" FLUSH VALVE
ORIFICE PLATE ASSEMBLY
NOT TO SCALE

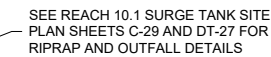
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Client: The Navajo Nation
Location: Coyote Canyon, NM
4 INCH FLUSH ABOVE-GRADE DISCHARGE DETAIL
NAVAJO GALLUP WATER SUPPLY PROJECT
BEACON BISTI N9 - REACH 10.1
MCKINLEY COUNTY, NEW MEXICO

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Scale: Horiz: 1" = 2' Vert: N/A
Project No: 6922268
Sheet: DT-8

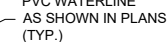


COLLAR SCRIBING DETAIL
NOT TO SCALE



INSTALL 45° OR 22.5°
- ELL AS NEEDED.
SEE NOTE 7.

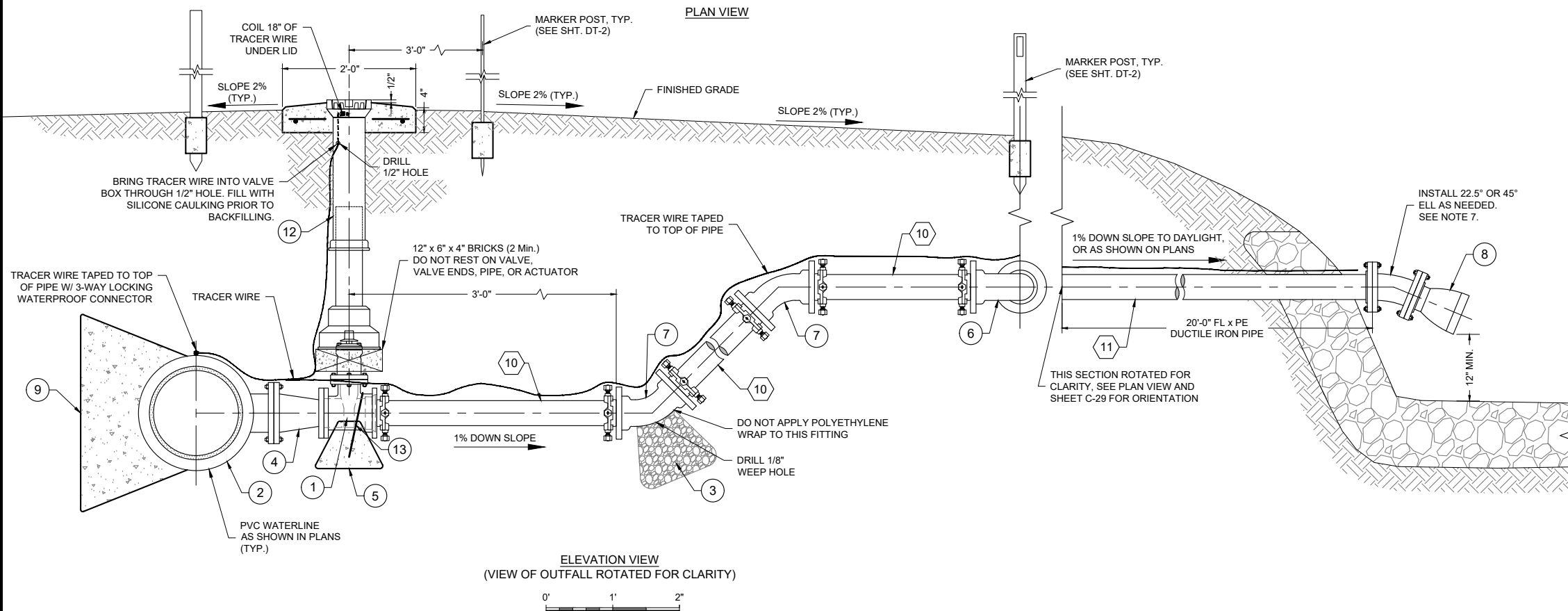
4" DRAIN LINE
SEE SHEET 0.20



REBAR, VALVE BOX
— AND SUPPORT BRICKS
OMITTED FOR CLARITY

2'-0" x 2'-0" x 4" FORMED
CONCRETE COLLAR,
3000 psi

PLAN VIEW



REACH 10.1 SURGE TANK SITE 4" FLUSH VALVE WITH RISER DETAIL

KEYED NOTES - SURGE TANK SITE 4" FLUSH VALVE WITH RISER	
Item No.	Description
1	4" GATE VALVE, MJ x MJ, FBE COATED W/ 2" OPERATING NUT, 350 psi
2	16" x 6" MJ x FL REDUCING TEE, D.I., 250 psi
3	ROUNDED ROCK (2 CU. YD.)
4	6" x 4" FL x FL REDUCER, D.I., 250 psi
5	1'-0" x 1'-0" x 1'-0" CONCRETE BLOCK, 3000 psi
6	4" 90° MJ ELL., D.I., 350 psi
7	4" 45° MJ ELL., D.I., 350 psi
8	4" FLANGED RUBBER CHECK VALVE, ANSI CLASS 150
9	THRUST BLOCK (SEE DETAIL DT-3)
10	4" PVC PIPE, DR18
11	4" FL x PE DUCTILE IRON PIPE, STANDARD WALL, BITUMINOUS COATED MORTAR LINED, 350 psi
12	VALVE BOX SLIP TYPE WITH LOCKING CAST IRON COVER (SEE TYPICAL GATE VALVE DETAIL, SHEET DT-6)
13	#4 REBAR RESTRAINT

NOTES:

1. ALL NON STAINLESS METALLIC PIPE, VALVES AND FITTINGS SHALL BE FBE-COATED, INTERIOR AND EXTERIOR. ALL NON STAINLESS METALLIC PIPE IN CONTACT WITH SOIL SHALL ALSO BE COLD APPLIED TAPE-COATED PER SPECIFICATIONS, UNLESS OTHERWISE NOTED.
2. ORIENTATION AND LOCATION OF OUTLET TO BE DETERMINED IN FIELD BY ENGINEER.
3. APPLY CATHODIC PROTECTION TO ALL BURIED METALLIC WATER-CARRYING COMPONENTS LOCATED WITHIN CORROSIVE SOIL ZONES, AS DESIGNATED IN THE PLANS AND/OR SPECIFICATIONS.
4. ALL NON STAINLESS STEEL PIPE AND FITTINGS SHALL BE STANDARD WALL. ALL STAINLESS STEEL PIPE AND FITTINGS SHALL HAVE A WORKING PRESSURE OF AT LEAST 350 psi, UNLESS OTHERWISE NOTED.
5. ALL FLUSH VALVE COMPONENTS SHALL REMAIN WITHIN RIGHT-OF-WAY.
6. RESTRAIN PVC DRAIN LINES PER SHEET DT-3.
7. INSTALL 22.5" OR 45" ELL AT PIPE OUTLET AS NEEDED TO DIRECT WATER FLOW INTO THE RIPRAP. DO NOT ALLOW WATER OUTFLOW TO HIT UNARMORED SOIL.
8. ALL MATERIALS RATED TO AT LEAST MAINLINE PIPE PRESSURE RATING, UNLESS OTHERWISE NOTED.
9. MECHANICAL JOINTS OMITTED FROM ISOMETRIC VIEWS FOR CLARITY.
10. CONTRACTOR SHALL ENSURE FLUSH DRAIN LINE OUTFALL HAS MINIMUM REQUIRED CLEARANCE TO RIPRAP.

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Client: The Navajo Nation

4-INCH FLUSH VALVE WITH RISER DETAIL
NAVAJO GALLUP WATER SUPPLY PROJECT
BEACON BISTI N9 - REACH 10.1
MCKINLEY COUNTY, NEW MEXICO

90% REVIEW
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2/2022

Designed TTT	Drawn AAV	Checked JMG
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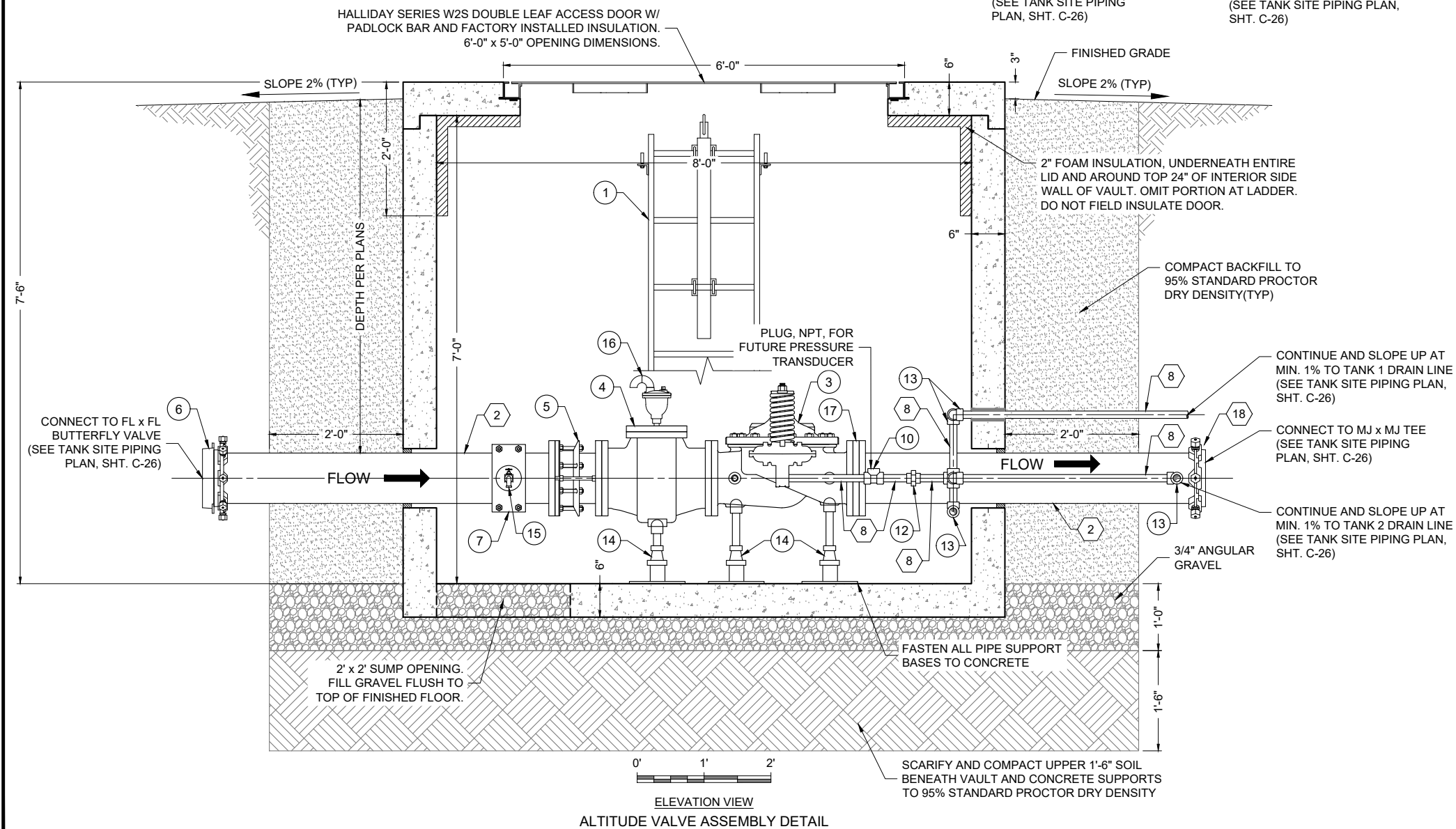
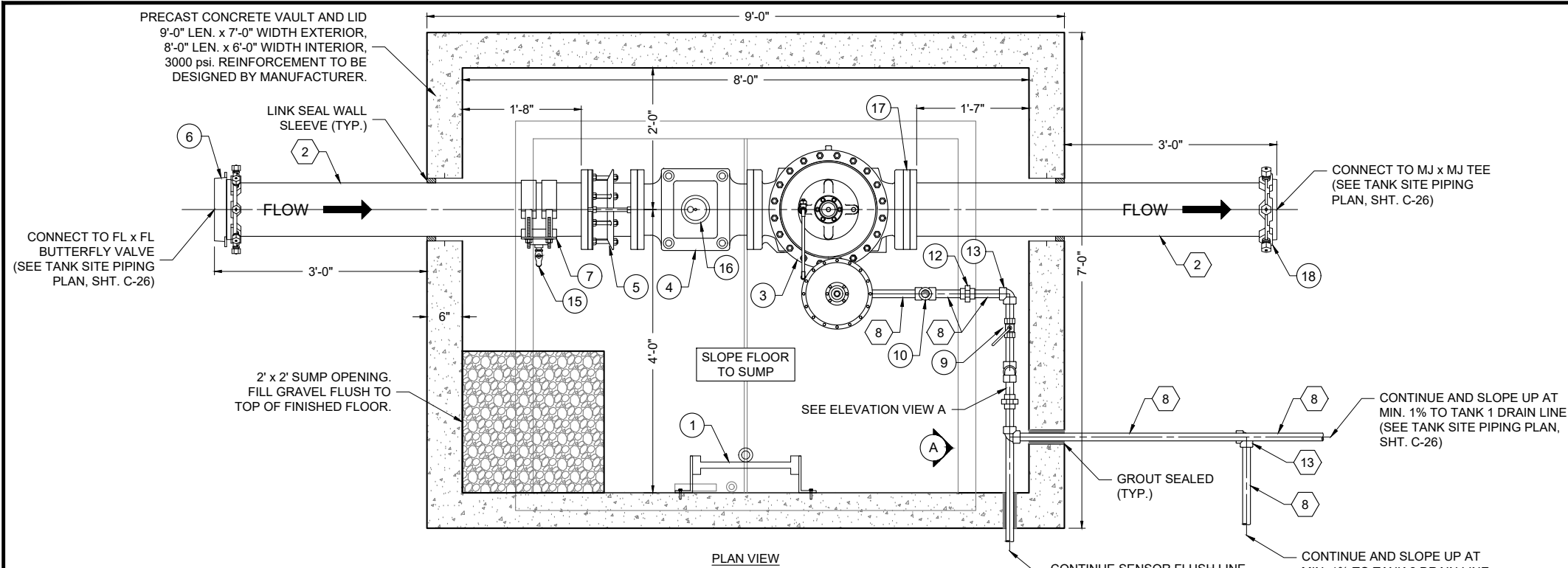
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	Vert:	N/A

Project No: 6922268

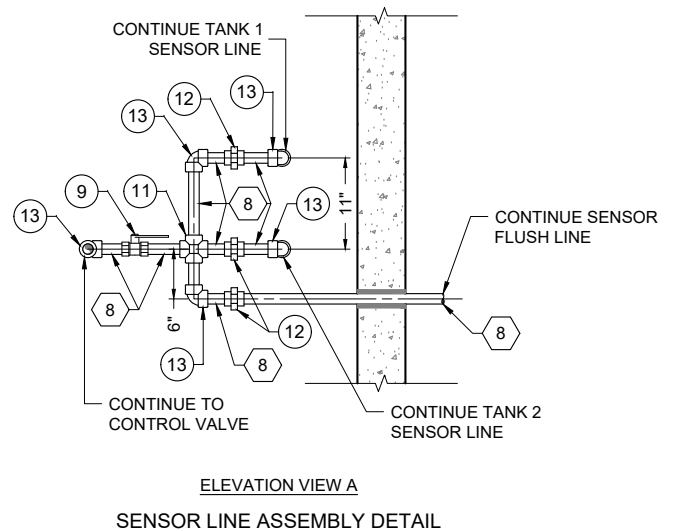
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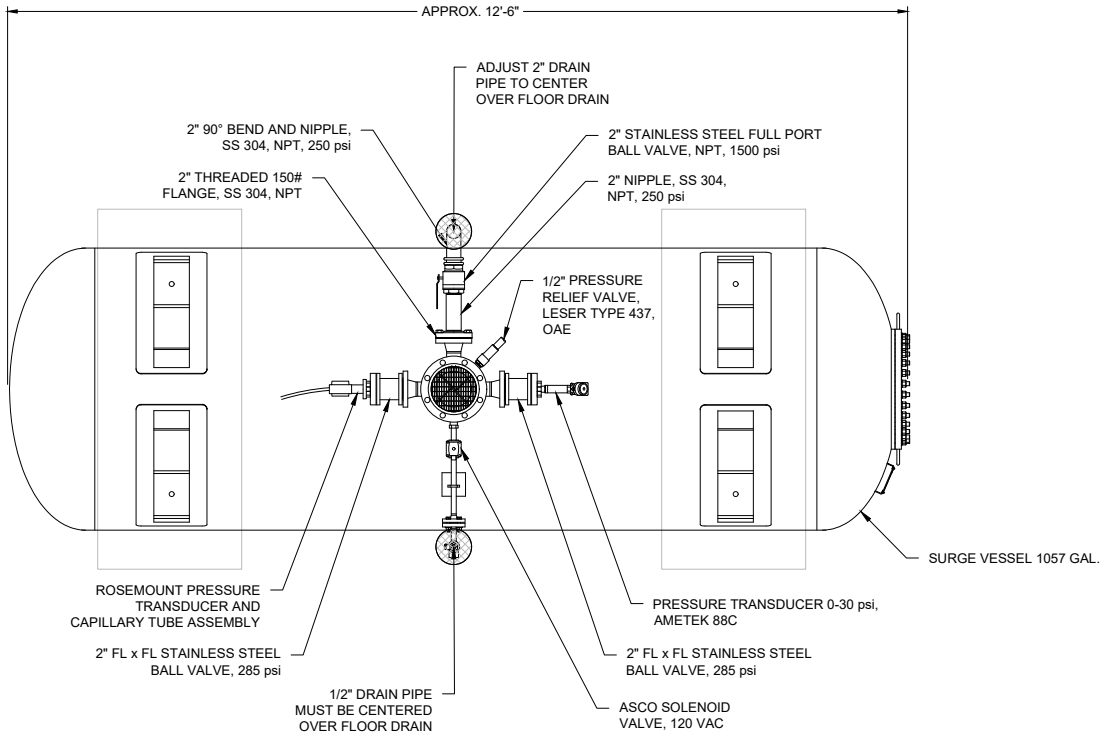


KEYED NOTES - 8" COMBINATION ALTITUDE AND FLOW CONTROL VALVE ASSEMBLY	
Item No.	Description
1	ALUMINUM LADDER W/ SAFETY POST ANCHORED TO VAULT OPENING AND FLOOR
2	8" FL x PE SPOOL, DUCTILE IRON
3	8" COMBINATION ALTITUDE AND FLOW CONTROL VALVE, CLA-VAL, OAE
4	8" H STYLE STRAINER, CLA-VAL, OAE
5	8" DISMANTLING JOINT, FBE COATED W/ 304 SS BOLTS, ROMAC MODEL DJ400, AWWA C207 CLASS E FLANGE, OAE
6	8" MJ FLANGE ADAPTER, FBE-COATED WITH SS 304 BOLTS, MEGAFLANGE SERIES 2100, 235 psi, OAE
7	8" x 3/4" TAPPING SADDLE
8	1" STEEL PIPE, NPT, SS 304
9	1" BALL VALVE, SS 304
10	1" TEE, NPT, SS 304
11	1" CROSS, NPT, SS 304
12	1" UNION, NPT, SS 304
13	1" 90° BEND, NPT, SS 304
14	ADJUSTABLE PIPE SUPPORT W/ CRADLE
15	3/4" HOSE BIB WITH VACUUM BREAKER
16	1/2" AIR RELEASE VALVE
17	8" CLA-VAL FLOW CONTROL ORIFICE PLATE
18	8" MEGALUG

NOTES:

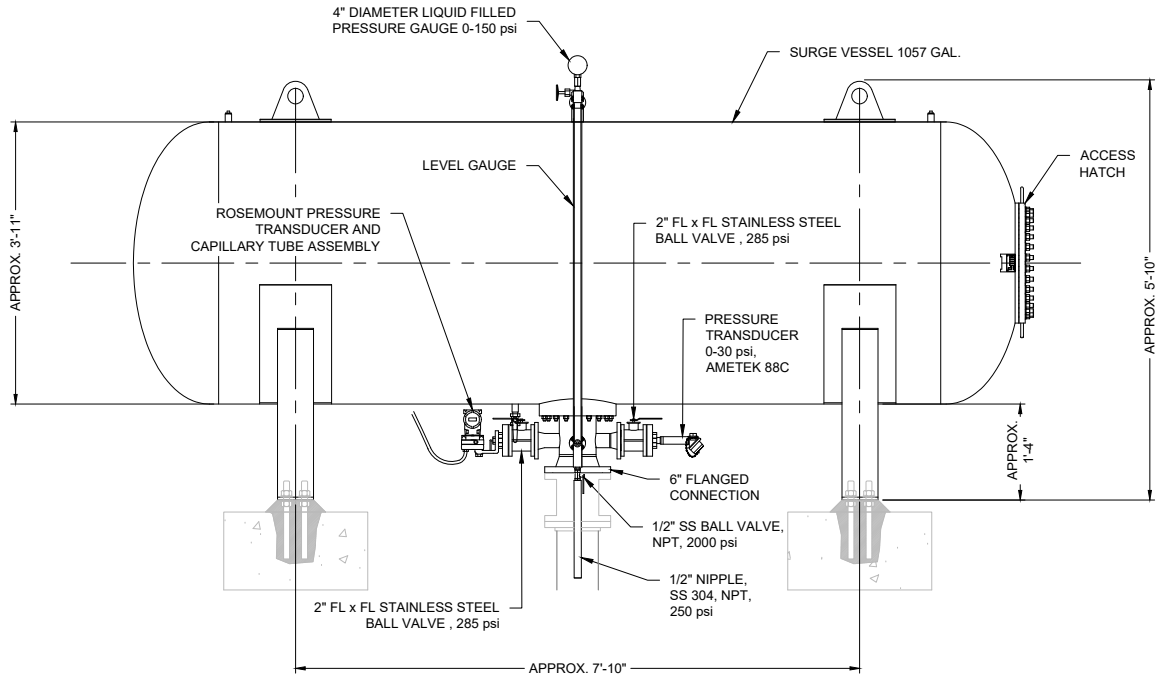
1. ALL FLANGES SHALL BE ANSI CLASS 150 (STEEL) OR ANSI CLASS 125 (IRON). CONTRACTOR SHALL ENSURE ALL FLANGES / GASKETS ARE COMPATIBLE.
2. CONTRACTOR SHALL ETCH VAULT LID WITH 4" GRINDER AS FOLLOWS: PIPE STATION, VALVE SIZE, "ALTITUDE VALVE ", PIPE AND MATERIAL, WITH DIRECTIONAL ARROWS.
3. ALL MATERIALS RATED TO AT LEAST 235 psi UNLESS OTHERWISE SPECIFIED.
4. FIELD INSULATE PILOT SYSTEM BY WRAPPING WITH BATT INSULATION.
5. SENSOR LINE PENETRATIONS SHALL BE COMPLETED IN THE FIELD AFTER VERIFICATION OF EXACT LINE LOCATIONS.
6. ALL 8" PIPE SHALL BE FULLY SUPPORTED. SOME PIPE SUPPORTS NOT SHOWN FOR CLARITY.
7. ALL 1" PIPE TO BE SECURED WITH PIPE CLAMPS MOUNTED TO UNISTRUTS OR THE WALL. PIPE SUPPORTS NOT SHOWN FOR CLARITY.
8. SLOPE VAULT FLOOR TO SUMP OPENING.



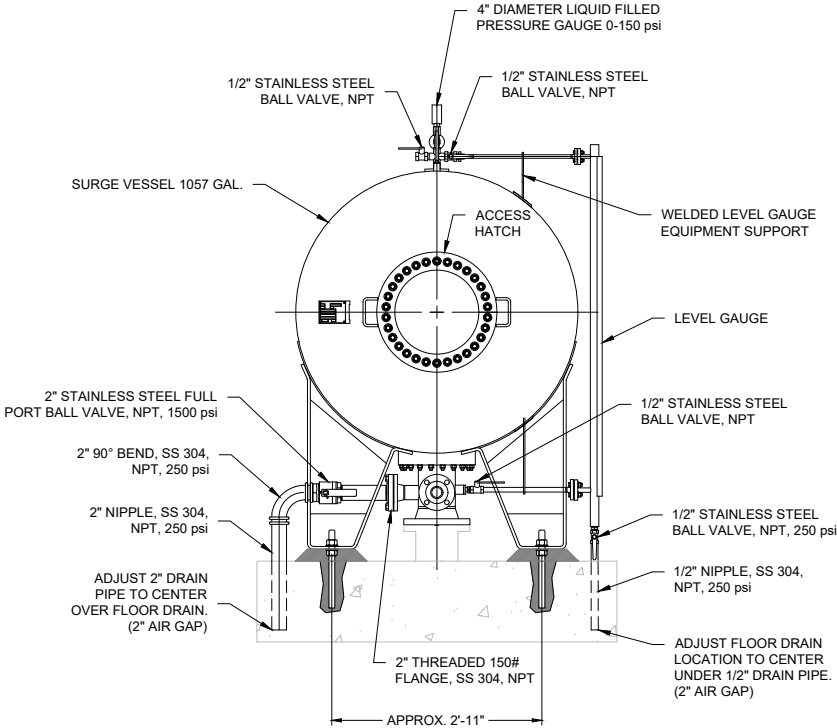


UNDERSIDE VIEW OF SURGE TANK
3/8" = 1' - 0"

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.



ELEVATION VIEW OF SURGE TANK
3/8" = 1' - 0"



END VIEW OF SURGE TANK
3/8" = 1' - 0"

Revision	Date	Description	By	Chkd

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Client: The Navajo Nation
Location: Coyote Canyon, NM

SURGE TANK DETAILS
NAVAJO GALLUP WATER SUPPLY PROJECT
BEACON BISTI N9 - REACH 10.1
McKINLEY COUNTY, NEW MEXICO

90% REVIEW DRAFT

PRELIMINARY
NOT FOR CONSTRUCTION
2/2022

Designed AGR	Drawn AAV	Checked AGR
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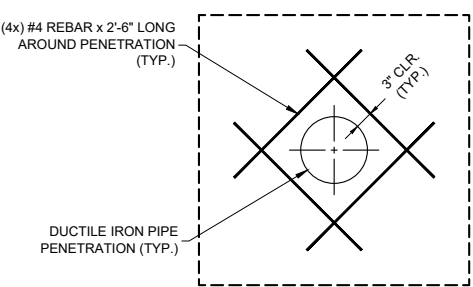
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Date: February 2022
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Project No: 6922268
Sheet: **DT-11**

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1 FOUNDATION PLAN
1/4" = 1'-0"

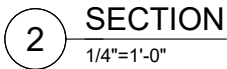


0' 2' 4'

GRAPHIC SCALE

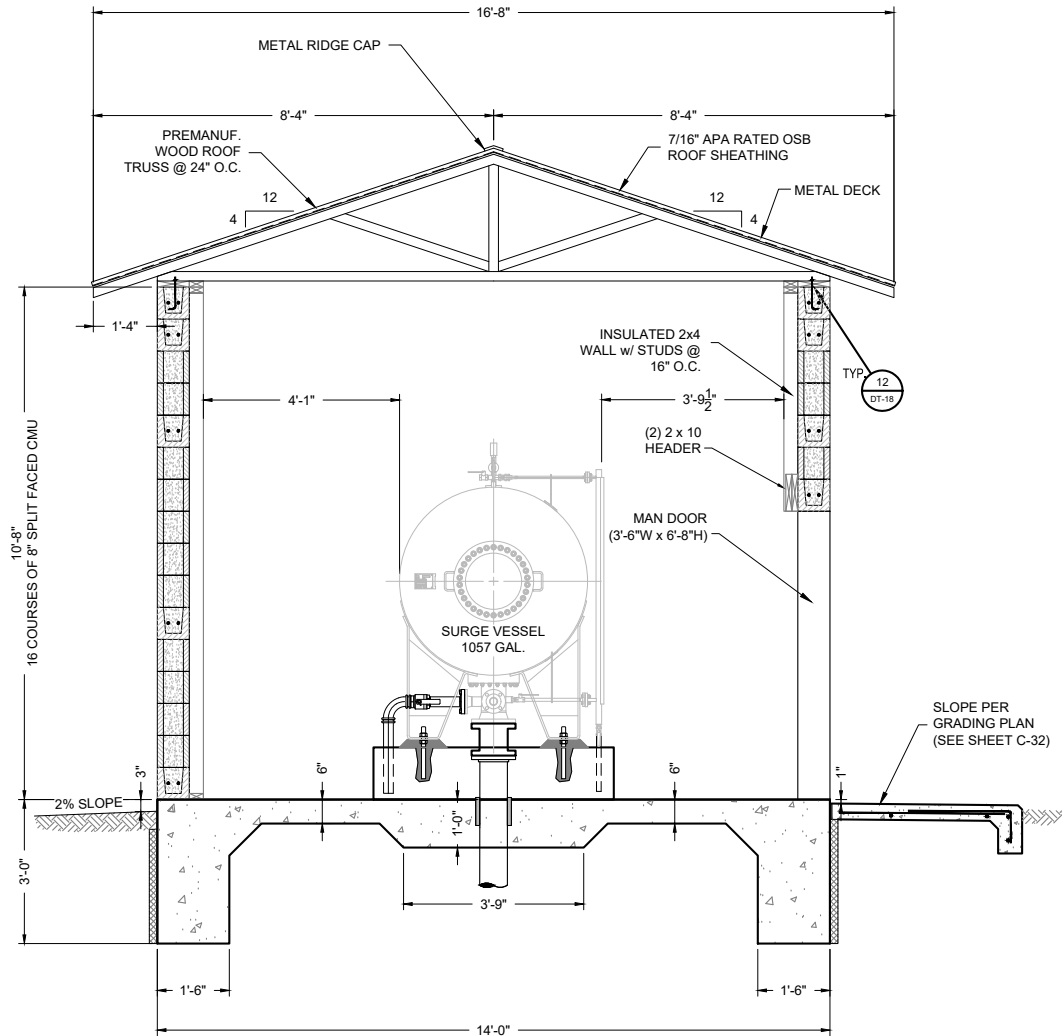
8. ALL FLOOR DRAINS SHALL BE CENTERED UNDER PIPE OUTLETS. FIELD VERIFY LOCATIONS.
DESIGN LOADS

SITE CLASS.....D

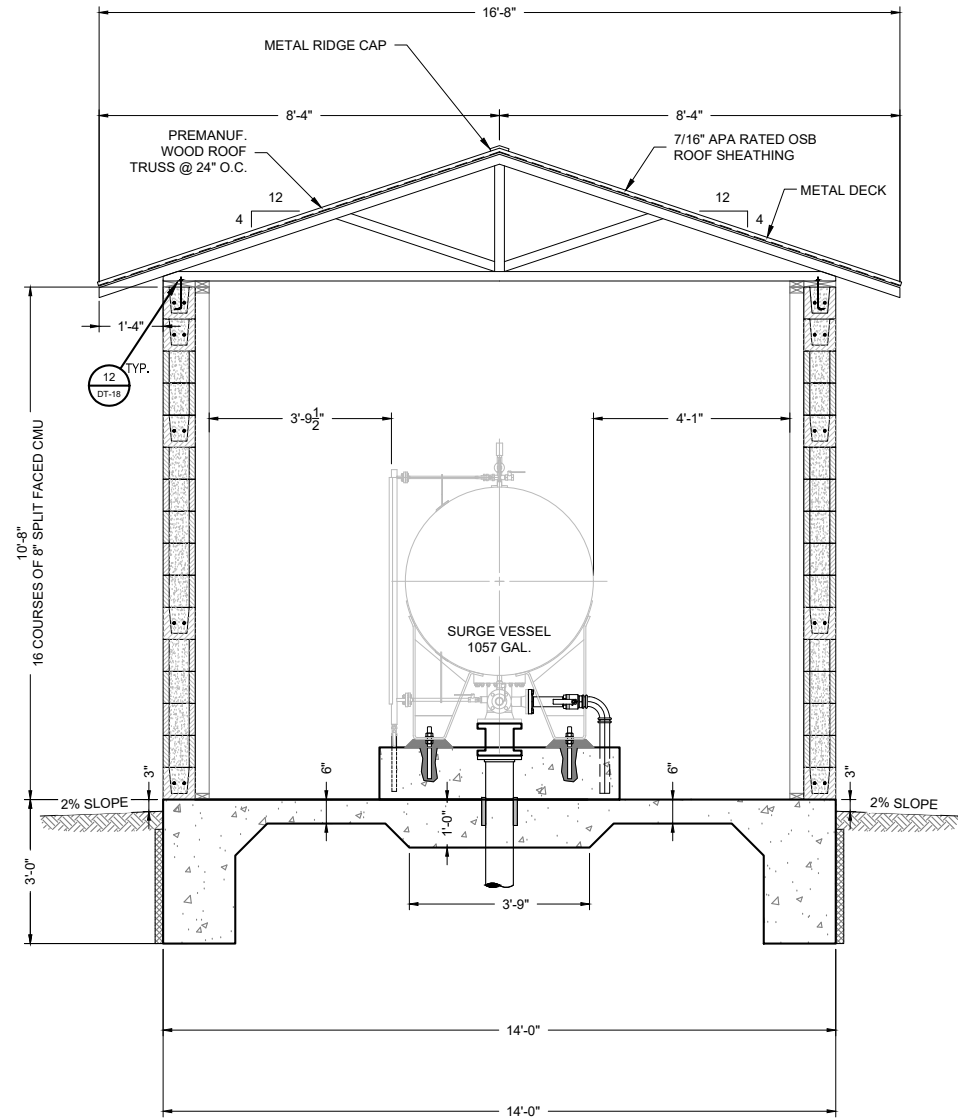


- Sheet: DT-13

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3 SECTION
1/4"=1'-0"
0' 2' 4'
GRAPHIC SCALE



4 SECTION
1/4"=1'-0"
0' 2' 4'
GRAPHIC SCALE

NOTES

- ALL DIMENSIONS RELATED TO TANK SIZES, LEG SPACING, ETC. ARE APPROXIMATE. CONTRACTOR RESPONSIBLE TO VERIFY ACTUAL TANK DIMENSIONS AND ALIGN ACTUAL LOCATION OF TANK LEGS AND ALL PIPING INLETS, OUTLETS AND DRAINS IN THE FIELD PRIOR TO CONSTRUCTION.
- INSTALL TEMPORARY 6-INCH ANSI CLASS 125 BLIND FLANGE PRIOR TO FILLING AND FLUSHING PIPELINE. FLUSH LINE FROM STATION 404+57 TO STATION 451+61 WITH BLIND FLANGE IN PLACE. COMPLETE HYDROSTATIC TESTING OF PIPING UNDERNEATH AND WITHIN SURGE TANK BUILDING PRIOR TO REMOVING BLIND FLANGE. REMOVE BLIND FLANGE AND INSTALL 6-INCH PROCO FITTING AFTER THIS SECTION OF LINE FLUSHING AND HYDROSTATIC PRESSURE TESTING IS COMPLETE, BUT PRIOR TO STARTING UP SURGE TANK. DO NOT INSTALL PROCO FITTING UNTIL LINE FLUSHING FROM STATION 404+57 TO STATION 451+61 IS COMPLETE. DO NOT AIR CHARGE SURGE TANK UNTIL PROCO FITTING IS INSTALLED. DO NOT OPERATE THE PROJECT OR FLUSH BEYOND THE FIRST FLUSH VALVE UNTIL SURGE TANK IS STARTED UP AND OPERATIONAL.
- USE DOUBLE NUTS AT TANK PEDESTALS TO ADJUST SURGE TANK HEIGHT AND LEVEL. DO NOT PLACE NON-SHRINK GROUT BETWEEN PEDESTAL AND TANK BASE UNTIL BLIND FLANGE IS REMOVED, PROCO FITTING INSTALLATION IS FINALIZED, AND TANK HEIGHT AND PROCO COMPRESSION ARE APPROVED IN THE FIELD BY ENGINEER.
- CONTRACTOR TO APPLY ANTI-GRAFFITI COATING, GRAFFITI PROOFER GPA-300, TO EXTERIOR OF BUILDING.

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Client: The Navajo Nation
Location: Coyote Canyon, NM
SURGE TANK BUILDING SECTION (2 of 2)
NAVAJO GALLUP WATER SUPPLY PROJECT
BEACON BISTI N9 - REACH 10.1
MCKINLEY COUNTY, NEW MEXICO

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PRELIMINARY
NOT FOR CONSTRUCTION
2/2022

Designed GYQ	Drawn AAV	Checked AGR
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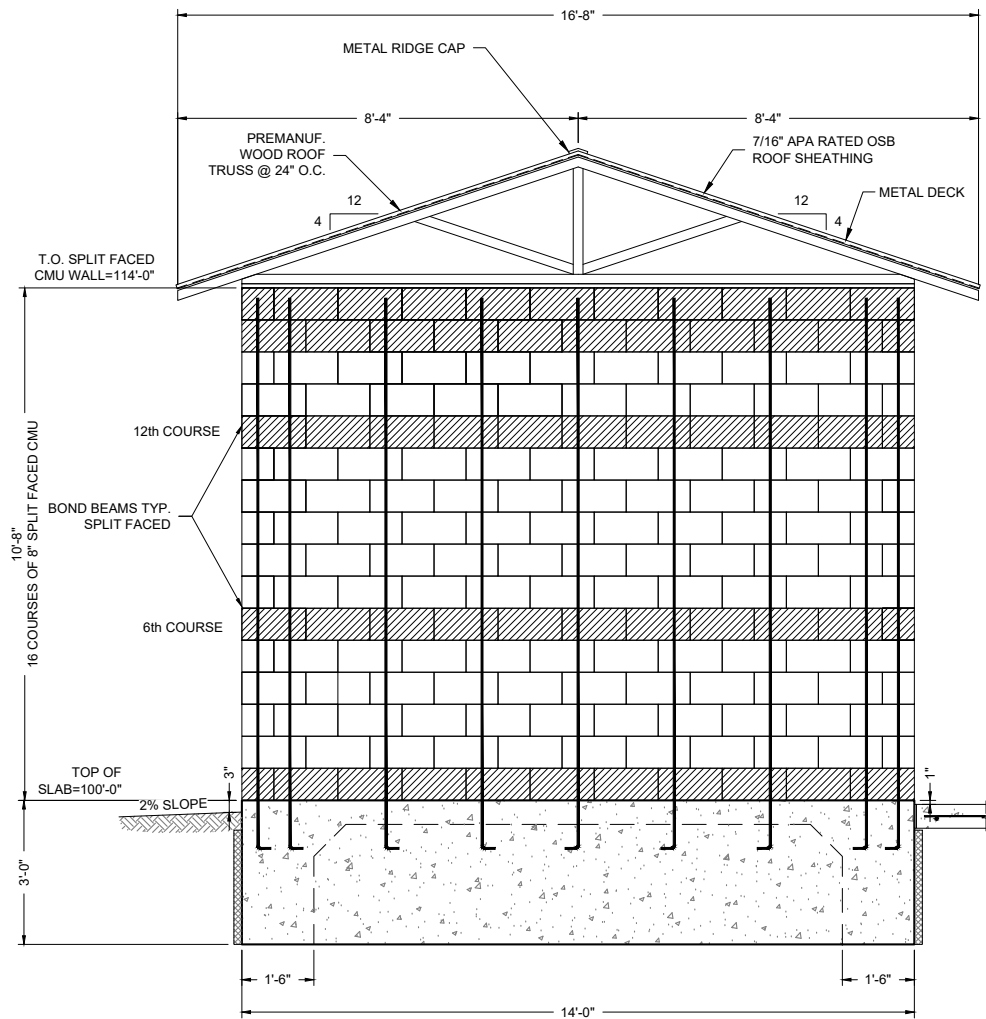
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Project No: 6922268

Sheet: DT-14

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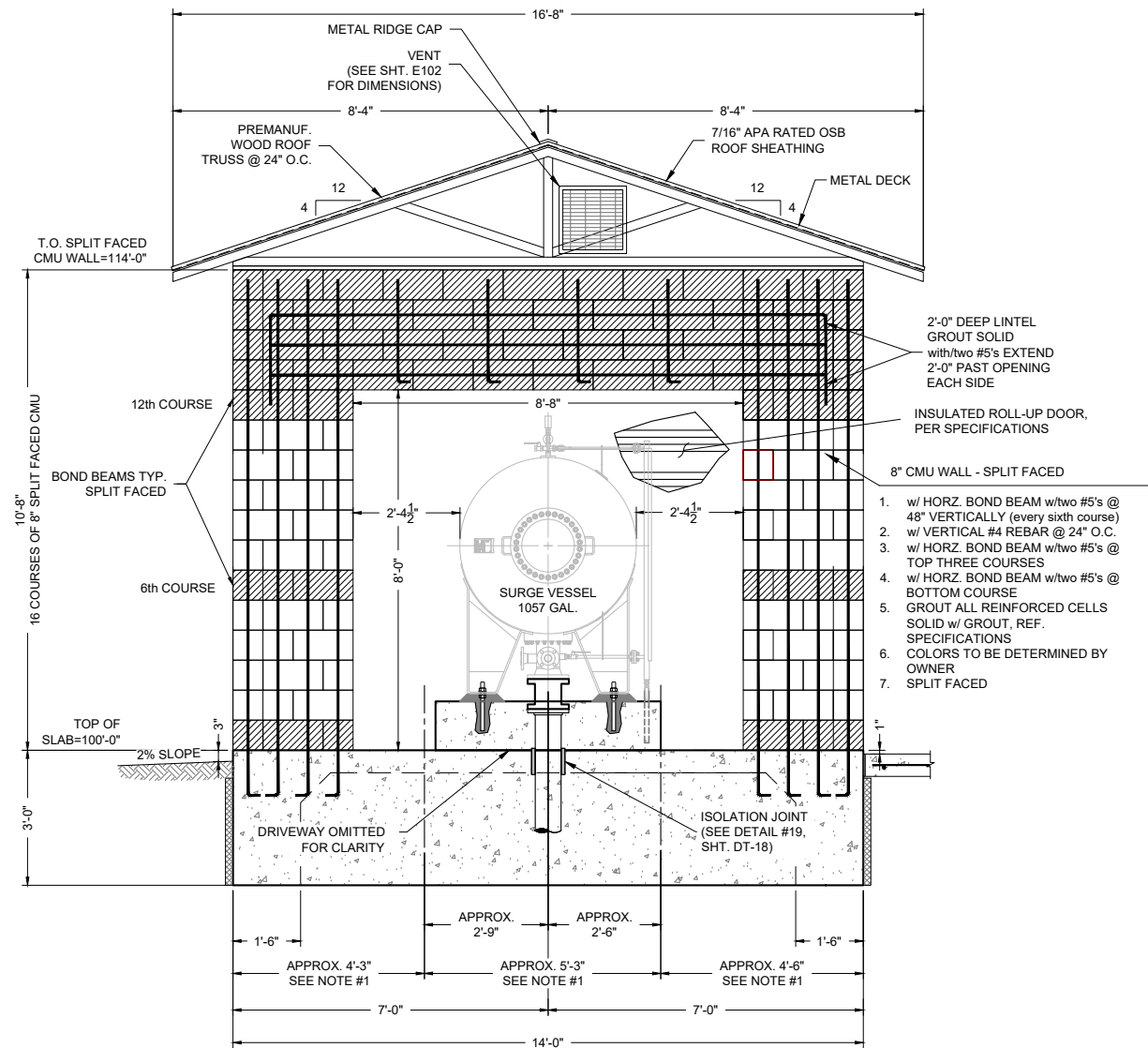
5 END VIEW
1/4"=1'-0"
0' 2' 4'
GRAPHIC SCALE

NOTES

- ALL DIMENSIONS RELATED TO TANK SIZES, LEG SPACING, ETC. ARE APPROXIMATE. CONTRACTOR RESPONSIBLE TO VERIFY ACTUAL TANK DIMENSIONS AND ALIGN ACTUAL LOCATION OF TANK LEGS AND ALL PIPING INLETS, OUTLETS AND DRAINS IN THE FIELD PRIOR TO CONSTRUCTION.
- FOR CONTINUATION OF SURGE TANK UNDERGROUND PIPING SEE SURGE TANK SITE PIPING PLAN, SHEETS C-30 & C-31.
- FOR BLOCK PATTERN DETAILS, SEE SHEET TBD
- CONTRACTOR TO APPLY ANTI-GRAFFITI COATING, GRAFFITI PROOFER GPA-300, TO EXTERIOR OF BUILDING.

LEGEND

 BOND BEAM



6 END VIEW
1/4"=1'-0"
0' 2' 4'
GRAPHIC SCALE

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Client: The Navajo Nation
Location: Coyote Canyon, NM

SURGE TANK BUILDING END VIEW
NAVAJO GALLUP WATER SUPPLY PROJECT
BEACON BISTI N9 - REACH 10.1
MCKINLEY COUNTY, NEW MEXICO

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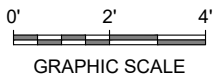
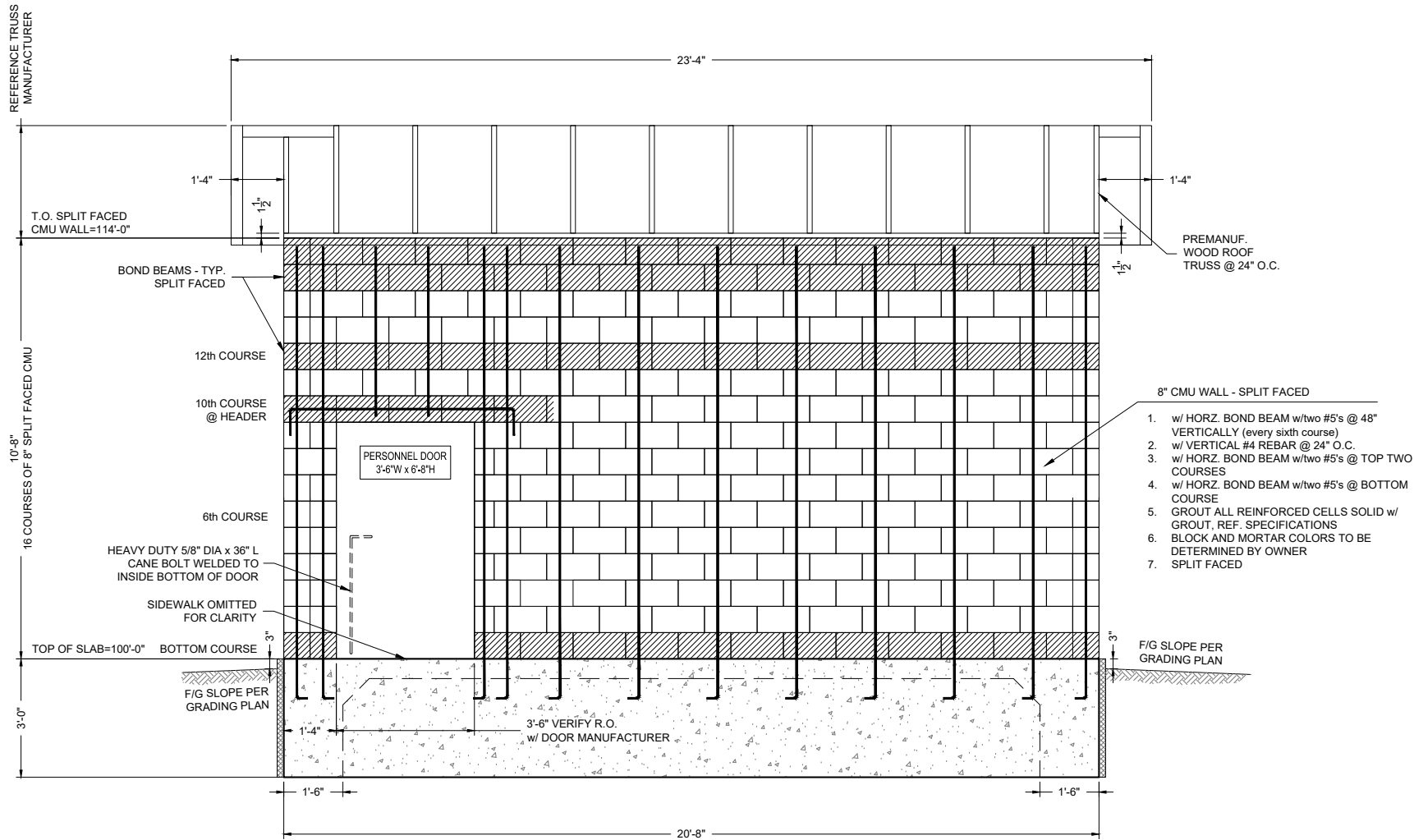
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7 ELEVATION W/ PANEL REINFORCING @ PERSONNEL-DOOR
1/4"=1'-0"

LEGEND

BOND BEAM

- NOTES
1. FOR BLOCK PATTERN DETAILS, SEE SHEET TBD
 2. CONTRACTOR TO APPLY ANTI-GRAFFITI COATING, GRAFFITI PROOFER GPA-300, TO EXTERIOR OF BUILDING.

Revision	Date	Description	By	Chkd

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Client: The Navajo Nation
Location: Coyote Canyon, NM

SURGE TANK BUILDING ELEVATION
NAVAJO GALLUP WATER SUPPLY PROJECT
BEACON BISTI N9 - REACH 10.1
MCKINLEY COUNTY, NEW MEXICO

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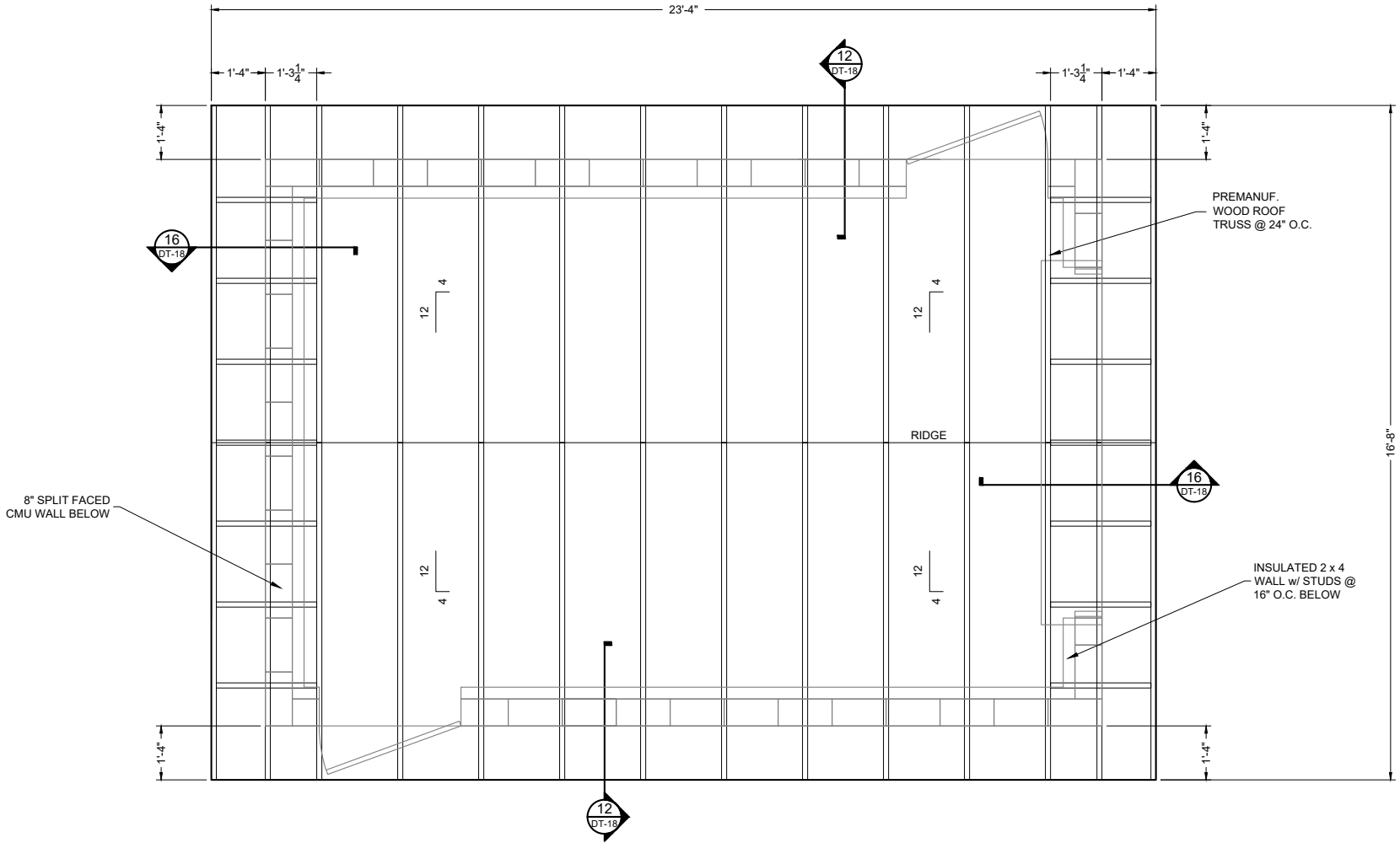
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8 ROOF PLAN
1/4"=1'-0"
0' 2' 4'
GRAPHIC SCALE

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Client: The Navajo Nation
Location: Coyote Canyon, NM

SURGE TANK BUILDING ROOF PLAN
NAVAJO GALLUP WATER SUPPLY PROJECT
BEACON BISTI N9 - REACH 10.1
MCKINLEY COUNTY, NEW MEXICO

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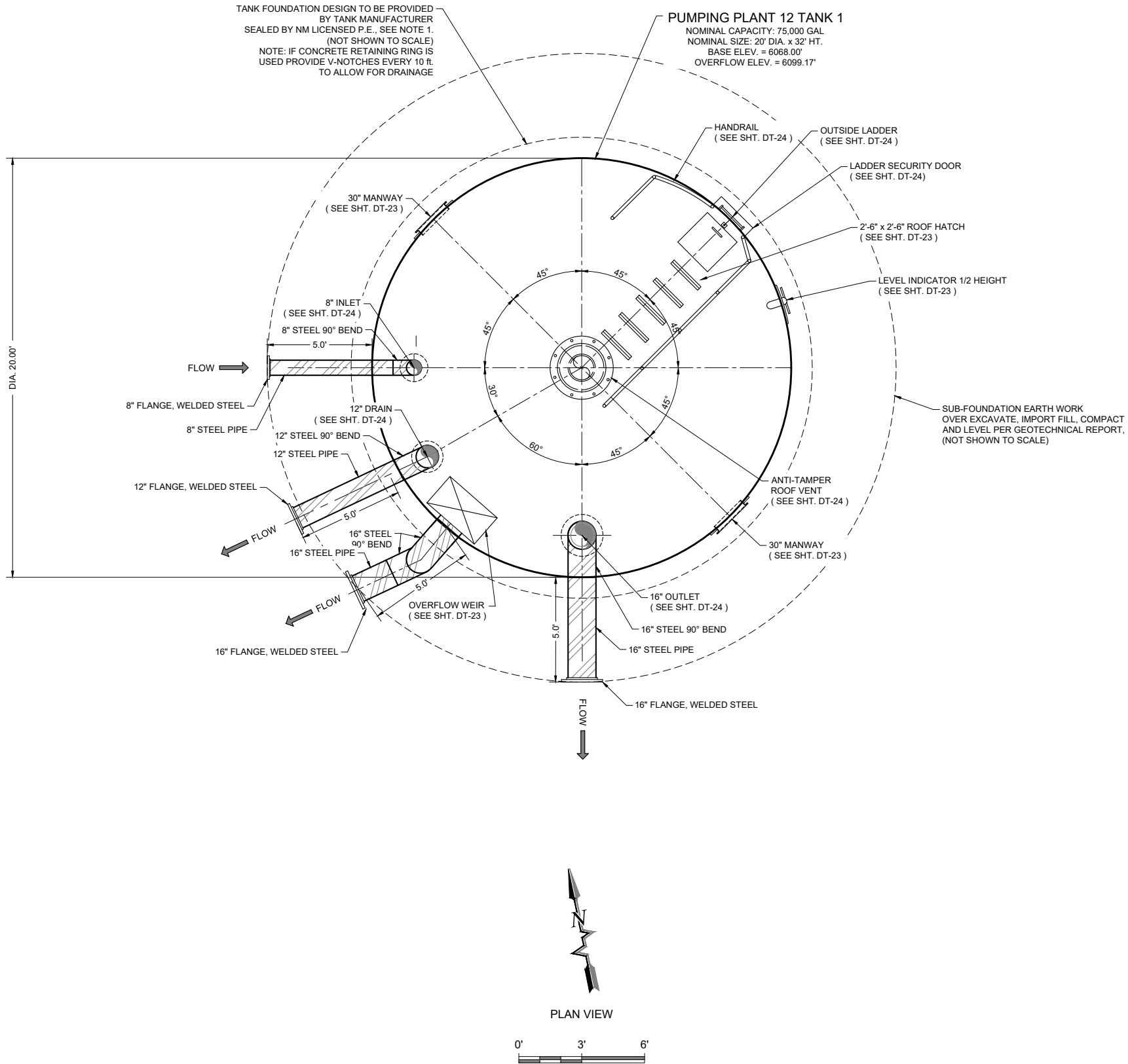
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NOTES:

1. FOUNDATION AND TANK STRUCTURAL DESIGN DRAWINGS AND CALCULATIONS (SEALED BY NEW MEXICO-LICENSED PROFESSIONAL ENGINEER) TO BE PROVIDED BY TANK MANUFACTURER. FOUNDATION SHALL BE CONCRETE RING, BASED ON LICENSED P.E.'S DESIGN AND THE RECOMMENDATIONS OF THE GEOTECHNICAL ENGINEERING SERVICES REPORT NO. 1-00908, DATED DECEMBER 1, 2020 AND ADDENDUM DATED SEPTEMBER 24, 2021.
2. TANK FOUNDATIONS MUST BE CONCRETE RING WALL TYPE FOUNDATION. STEEL RETAINING RING NOT ALLOWED. TANK SHALL BEAR ON A MINIMUM OF 18 INCHES OF ENGINEERED FILL. ENGINEERED FILL SHALL EXTEND 18" BEYOND FOUNDATION, MEASURED AT BOTTOM OF OVER-EXCAVATION. INCREASE DEPTH OF OVER-EXCAVATION, IF NECESSARY, TO ENSURE ENGINEERED FILL BEARS UNIFORMLY ON CUT; DO NOT ALLOW TRANSITION FROM CUT TO FILL TO PASS UNDERNEATH OR WITHIN 5 HORIZONTAL FEET OF TANK. REFER TO GEOTECHNICAL REPORT BY GEOTECHNICAL ENGINEERING SERVICES REPORT NO. 1-00908, DATED DECEMBER 1, 2020 AND ADDENDUM DATED SEPTEMBER 24, 2021. FOR SUBSURFACE INFORMATION, OVER EXCAVATION REQUIREMENTS, SUBGRADE PREPARATION, AND STRUCTURAL FILL & COMPACTION. ENGINEERED FILL SHALL BE COMPACTED TO 95% MIN. MODIFIED PROCTOR.
3. CONTRACTOR SHALL FIELD SURVEY ELEVATION OF OVERFLOW WEIR OF BOTH TANKS AND ENSURE OVERFLOW WEIR ELEVATIONS MATCH (WITHIN A TOLERANCE OF $\pm 1/2"$ INCH).
4. STATED TANK VOLUMES ARE NOMINAL. ACTUAL TANK VOLUMES SHALL BE WITHIN 2% OF THE STATED NOMINAL VALUE.
5. TANK COLOR TO BE TAN.
6. TANK APPURTENANCES SHOWN IN ELEVATION VIEW HAVE BEEN ROTATED INTO VIEW FOR DEPICTION PURPOSES.
7. STEEL OVERFLOW PIPING SHALL BE SHOP COATED WITH UV RESISTANT POLYAMIDE EPOXY PER TECHNICAL SPECIFICATIONS.
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11. SANDBLASTING WASTE SHALL BE DISPOSED OF OFF-SITE AT AN APPROVED SOLID WASTE FACILITY AT THE CONTRACTOR'S EXPENSE.
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13. ALL STEEL PIPE FLANGES SHALL BE ANSI CLASS 150.
14. EXACT ORIENTATION OF ALL TANK FEATURES AND PIPE PENETRATIONS TO BE DETERMINED IN THE FIELD BY THE ENGINEER. TANK MANUFACTURER SHALL CONFIRM ALL LOCATIONS W/ ENGINEER PRIOR TO FABRICATION. SOME FEATURES MAY BE ROTATED IN ELEVATION VIEW FOR CLARITY.
15. PASSIVE CATHODIC PROTECTION REQUIRED.



PUMPING PLANT 12 TANK 1 DETAIL

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SMA

Client: The Navajo Nation
Location: Coyote Canyon, NM

PP 12 TANK 1 DETAILS (1 OF 2)
NAVAJO GALLUP WATER SUPPLY PROJECT
BEACON BISTI N9 - REACH 10.1
MCKINLEY COUNTY, NEW MEXICO

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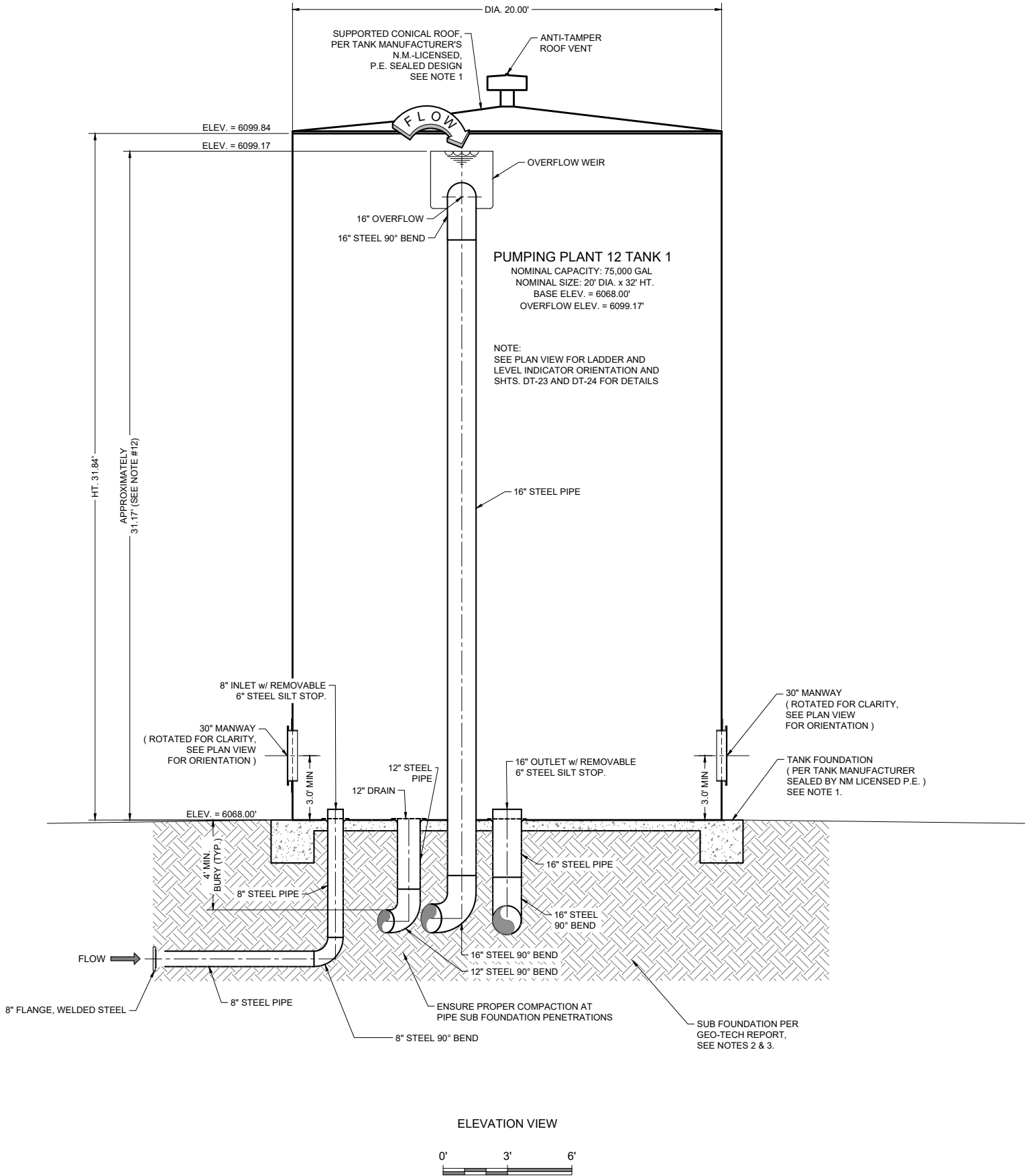
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Project No: 6922268
Sheet: **DT-19**

NOTES:

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11. SANDBLASTING WASTE SHALL BE DISPOSED OF OFF-SITE AT AN APPROVED SOLID WASTE FACILITY AT THE CONTRACTOR'S EXPENSE.
12. ALL BASE AND OVERFLOW ELEVATIONS PROVIDED IN THESE DRAWINGS ARE APPROXIMATE.
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15. PASSIVE CATHODIC PROTECTION REQUIRED.



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Client: The Navajo Nation
Location: Coyote Canyon, NM

PP 12 TANK 1 DETAILS (2 OF 2)
NAVAJO GALLUP WATER SUPPLY PROJECT
BEACON BISTI N9 - REACH 10.1
McKINLEY COUNTY, NEW MEXICO

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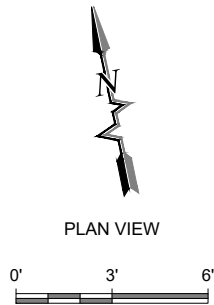
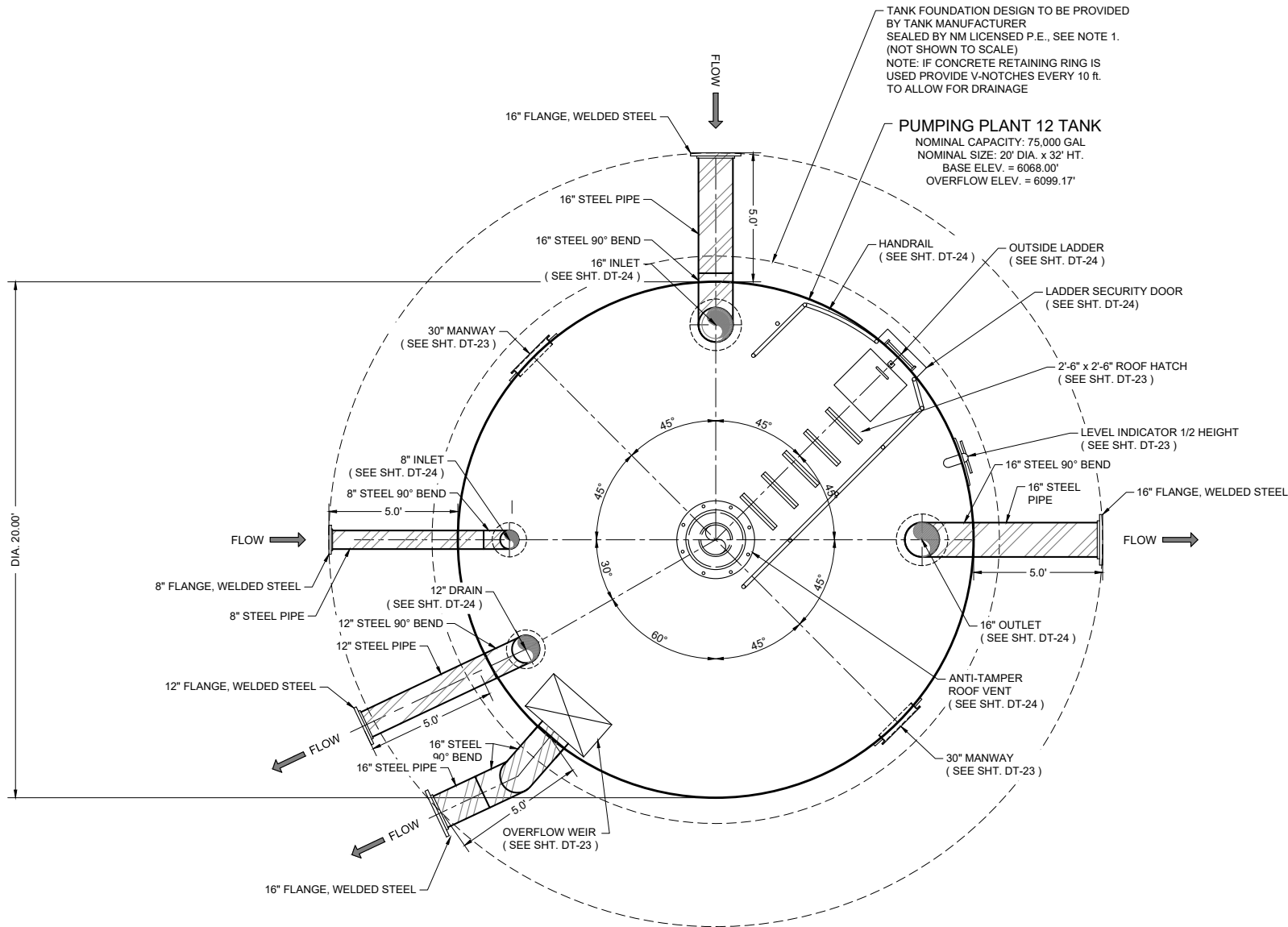
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Project No: 6922268
Sheet: DT-20

NOTES:

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11. SANDBLASTING WASTE SHALL BE DISPOSED OF OFF-SITE AT AN APPROVED SOLID WASTE FACILITY AT THE CONTRACTOR'S EXPENSE.
12. ALL BASE AND OVERFLOW ELEVATIONS PROVIDED IN THESE DRAWINGS ARE APPROXIMATE.
13. ALL STEEL PIPE FLANGES SHALL BE ANSI CLASS 150.
14. EXACT ORIENTATION OF ALL TANK FEATURES AND PIPE PENETRATIONS TO BE DETERMINED IN THE FIELD BY THE ENGINEER. TANK MANUFACTURER SHALL CONFIRM ALL LOCATIONS W/ ENGINEER PRIOR TO FABRICATION. SOME FEATURES MAY BE ROTATED IN ELEVATION VIEW FOR CLARITY.
15. PASSIVE CATHODIC PROTECTION REQUIRED.



PUMPING PLANT 12 TANK 2 DETAIL

Revision	Date	Description	By	Chk'd

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Client: The Navajo Nation
Location: Coyote Canyon, NM

PP 12 TANK 2 DETAILS (1 OF 2)
NAVAJO GALLUP WATER SUPPLY PROJECT
BEACON BISTI N9 - REACH 10.1
McKINLEY COUNTY, NEW MEXICO

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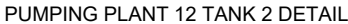
Designed TTT	Drawn AAV	Checked JMG
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Vert: N/A
Project No: 6922268
Sheet: **DT-21**

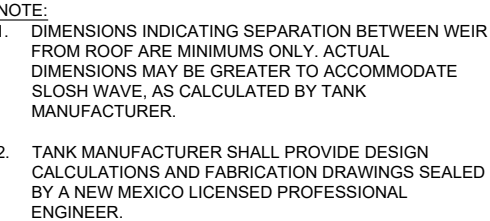
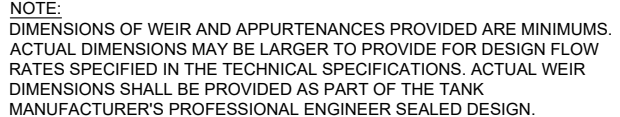
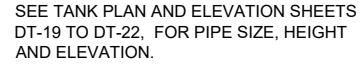
1. FOUNDATION AND TANK STRUCTURAL DESIGN DRAWINGS AND CALCULATIONS (SEALED BY NEW MEXICO-LICENSED PROFESSIONAL ENGINEER) TO BE PROVIDED BY TANK MANUFACTURER. FOUNDATION SHALL BE CONCRETE RING, BASED ON LICENSED P.E.'s DESIGN AND THE RECOMMENDATIONS OF THE GEOTECHNICAL ENGINEERING SERVICES REPORT NO. 1-00908, DATED DECEMBER 1, 2020 AND ADDENDUM DATED SEPTEMBER 24, 2021.
2. TANK FOUNDATIONS MUST BE CONCRETE RING WALL TYPE FOUNDATION. STEEL RETAINING RING NOT ALLOWED. TANK SHALL BEAR ON A MINIMUM OF 18 INCHES OF ENGINEERED FILL. ENGINEERED FILL SHALL EXTEND 18" BEYOND FOUNDATION, MEASURED AT BOTTOM OF OVER-EXCAVATION. INCREASE DEPTH OF OVER-EXCAVATION, IF NECESSARY, TO ENSURE ENGINEERED FILL BEARS UNIFORMLY ON CUT; DO NOT ALLOW TRANSITION FROM CUT TO FILL TO PASS UNDERNEATH OR WITHIN 5 HORIZONTAL FEET OF TANK. REFER TO GEOTECHNICAL REPORT BY GEOTECHNICAL ENGINEERING SERVICES REPORT NO. 1-00908, DATED DECEMBER 1, 2020 AND ADDENDUM DATED SEPTEMBER 24, 2021. FOR SUBSURFACE INFORMATION, OVER EXCAVATION REQUIREMENTS, SUBGRADE PREPARATION, AND STRUCTURAL FILL & COMPACTION. ENGINEERED FILL SHALL BE COMPACTED TO 95% MIN. MODIFIED PROCTOR.
3. CONTRACTOR SHALL FIELD SURVEY ELEVATION OF OVERFLOW WEIR OF BOTH TANKS AND ENSURE OVERFLOW WEIR ELEVATIONS MATCH (WITHIN A TOLERANCE OF $\pm 1/2"$ INCH).
4. STATED TANK VOLUMES ARE NOMINAL. ACTUAL TANK VOLUMES SHALL BE WITHIN 2% OF THE STATED NOMINAL VALUE.
5. TANK COLOR TO BE TAN.
6. TANK APPURTENANCES SHOWN IN ELEVATION VIEW HAVE BEEN ROTATED INTO VIEW FOR DEPICTION PURPOSES.
7. STEEL OVERFLOW PIPING SHALL BE SHOP COATED WITH UV RESISTANT POLYAMIDE EPOXY PER TECHNICAL SPECIFICATIONS.
8. ALL UNDERGROUND NON STAINLESS STEEL PIPE AND FITTINGS SHALL BE COLD APPLIED TAPE COATED EXTERIOR.
9. ALL STEEL PIPE AND FITTINGS UNDERNEATH AND WITHIN 5' OF TANKS OR BUILDINGS SHALL BE SHOP WELDED AND COATED, X-RAY TESTED AND PRESSURE TESTED PRIOR TO POURING FOUNDATIONS.
10. ALL STEEL PIPE AND FITTINGS SHALL BE STANDARD WALL UNLESS OTHERWISE NOTED.
11. SANDBLASTING WASTE SHALL BE DISPOSED OF OFF-SITE AT AN APPROVED SOLID WASTE FACILITY AT THE CONTRACTOR'S EXPENSE.
12. ALL BASE AND OVERFLOW ELEVATIONS PROVIDED IN THESE DRAWINGS ARE APPROXIMATE.
13. ALL STEEL PIPE FLANGES SHALL BE ANSI CLASS 150.
14. EXACT ORIENTATION OF ALL TANK FEATURES AND PIPE PENETRATIONS TO BE DETERMINED IN THE FIELD BY THE ENGINEER. TANK MANUFACTURER SHALL CONFIRM ALL LOCATIONS W/ ENGINEER PRIOR TO FABRICATION. SOME FEATURES MAY BE ROTATED IN ELEVATION VIEW FOR CLARITY.
15. PASSIVE CATHODIC PROTECTION REQUIRED.

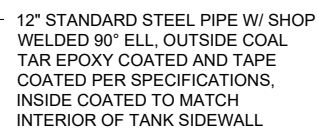
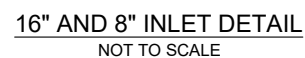
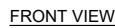
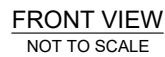
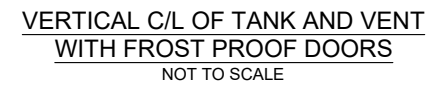
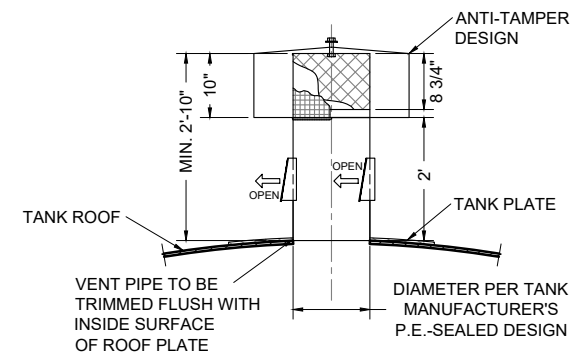
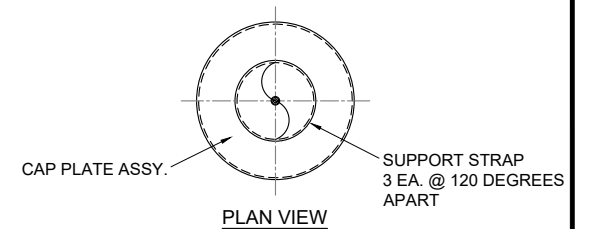
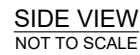




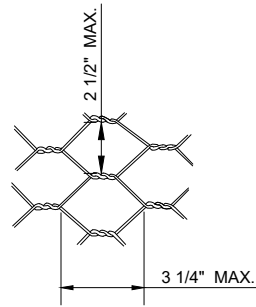
TYPICAL TANK OVERFLOW DETAIL

NOT TO SCALE

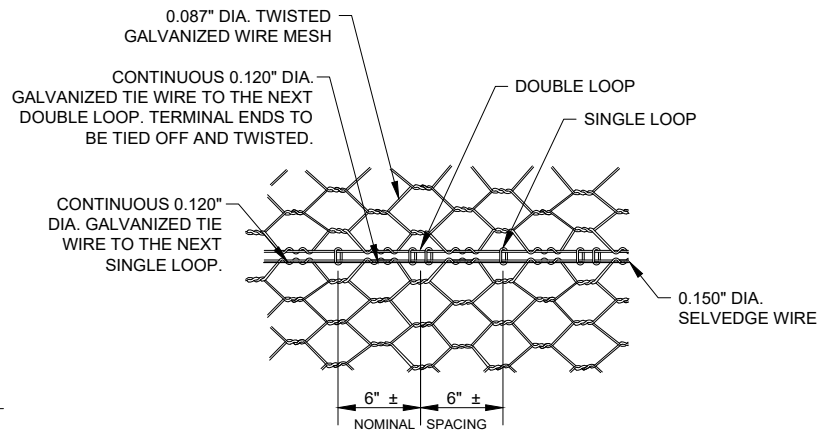




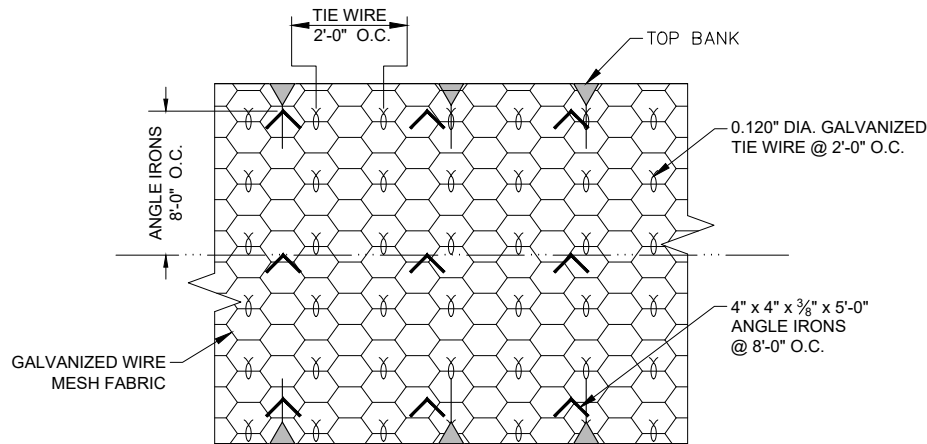
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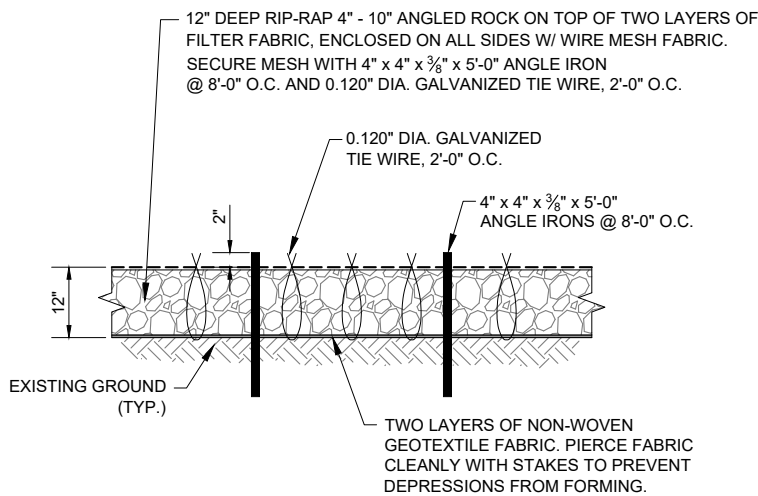
TWISTED MESH MATTRESS
NOT TO SCALE



STANDARD JOINT CONNECTION DETAIL
NOT TO SCALE

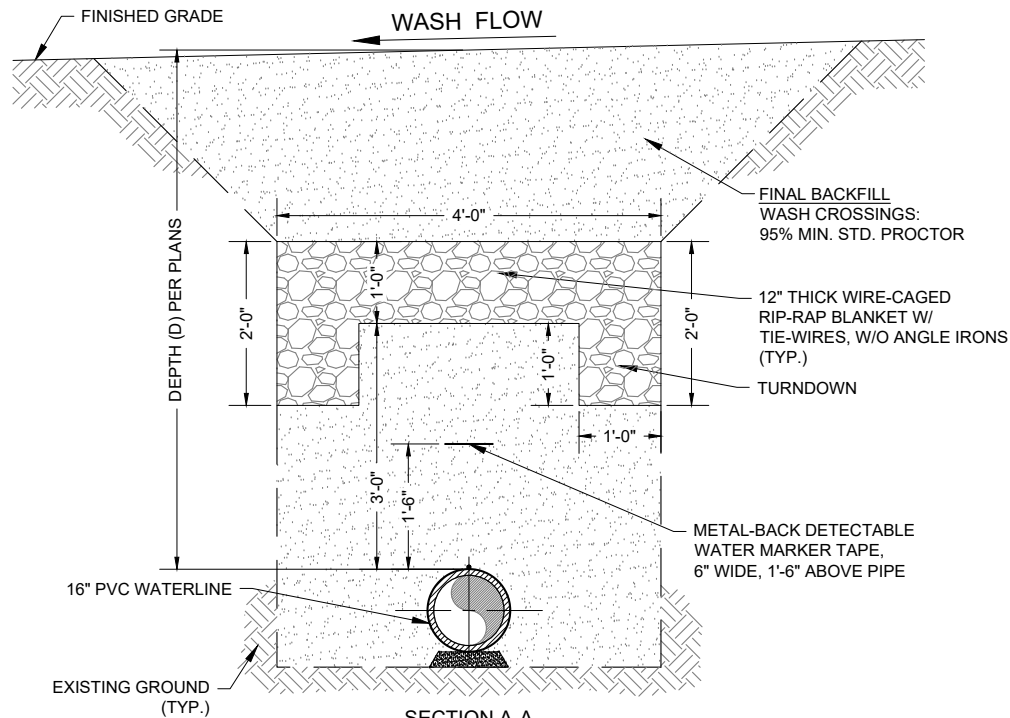


TYP. 12" RIP-RAP CAGE & ANCHORING
NOT TO SCALE



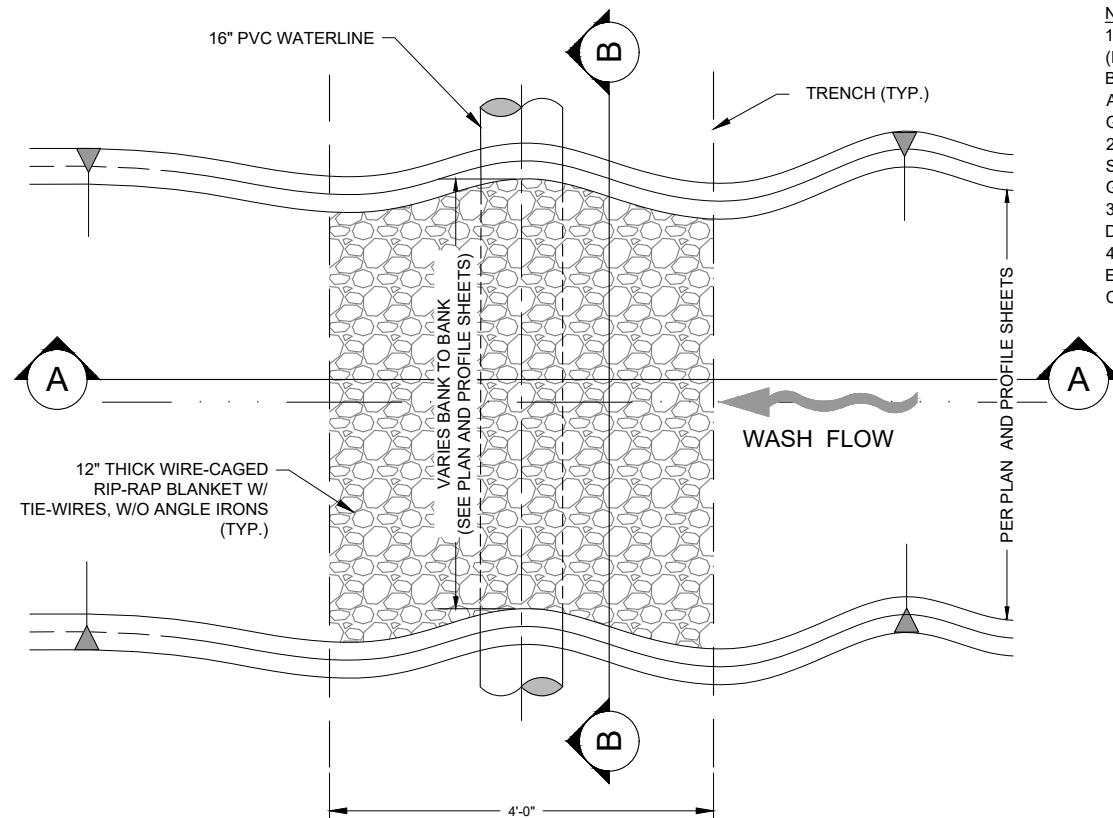
CROSS SECTION

TYPICAL 12" RIP-RAP DETAIL
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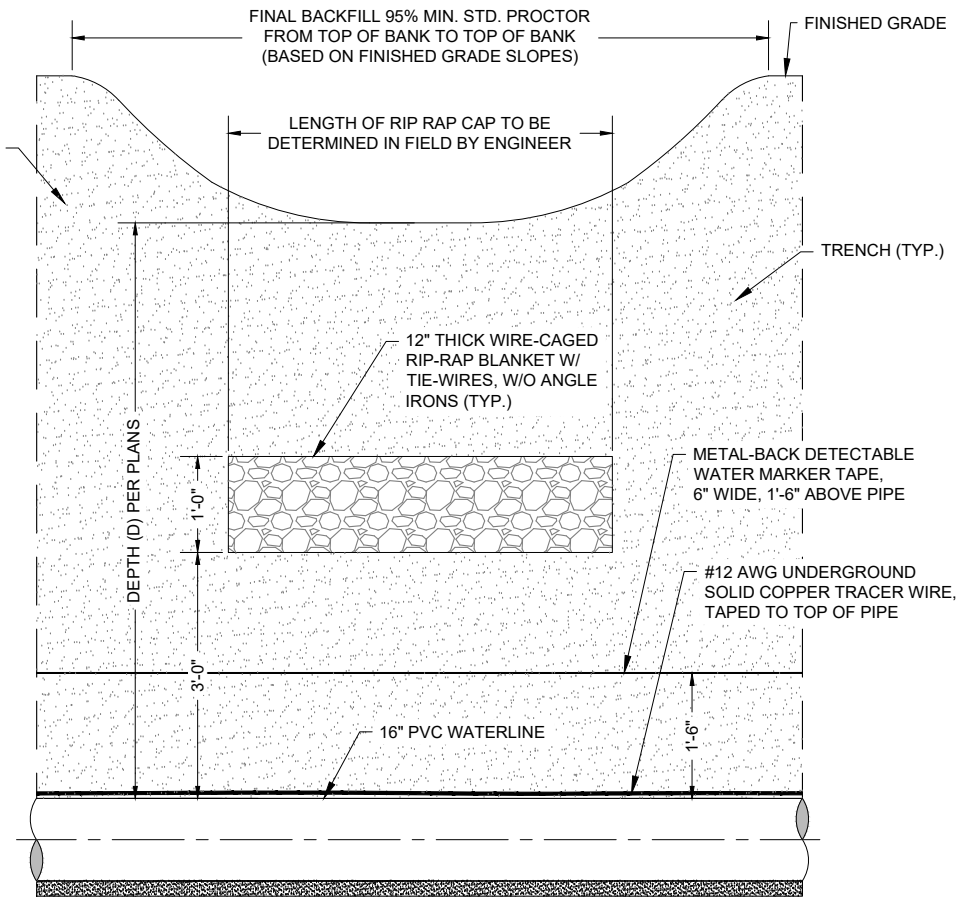


SECTION A-A

TYPICAL BURIED 12" RIP-RAP MATTRESS FOR WASH CROSSINGS
NOT TO SCALE



PLAN VIEW



SECTION B-B

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

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Client: The Navajo Nation
Location: Coyote Canyon, NM
EROSION CONTROL DETAILS (1 OF 3)
NAVAJO GALLUP WATER SUPPLY PROJECT
BEACON BISTI N9 - REACH 10.1
MCKINLEY COUNTY, NEW MEXICO

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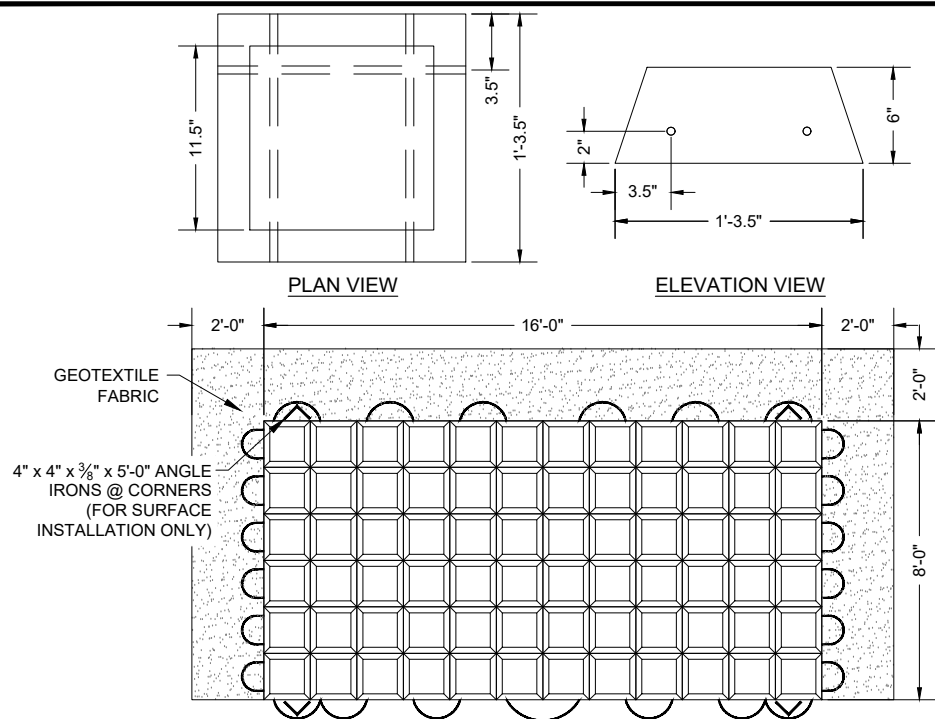
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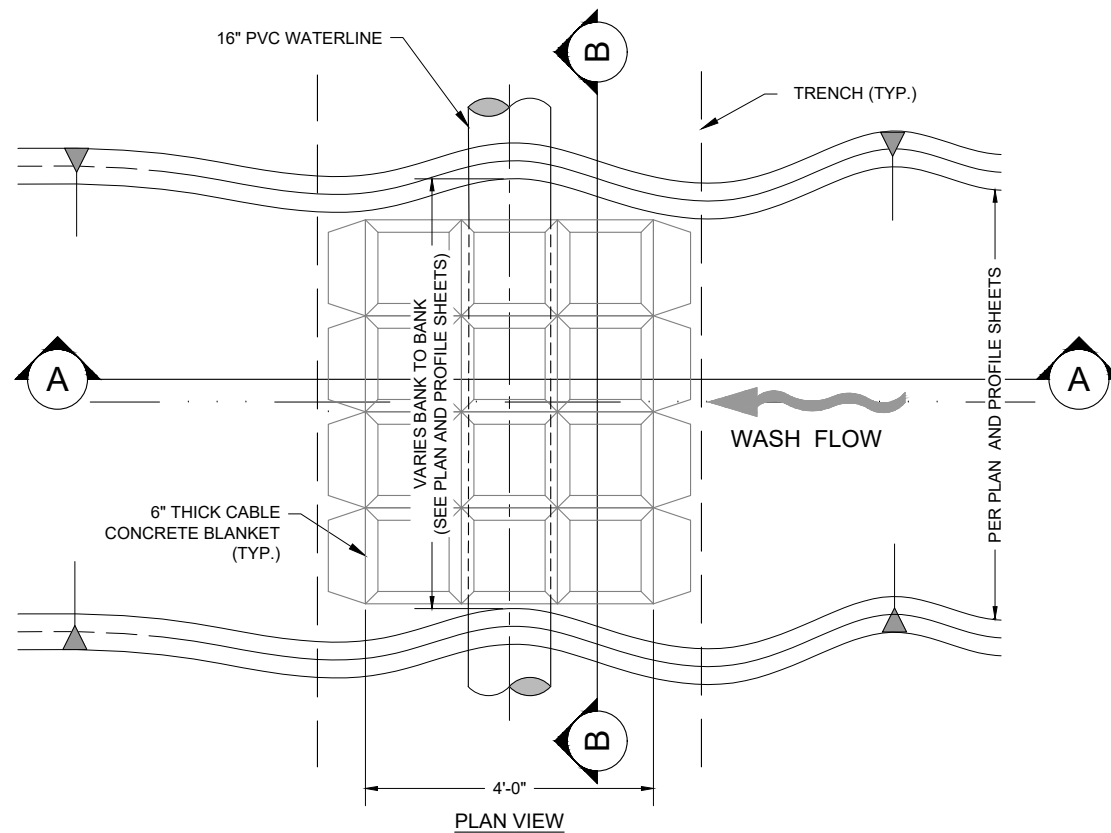
811 Know what's BELOW. CALL before you dig.

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Project No: 6922268
Sheet: **DT-25**

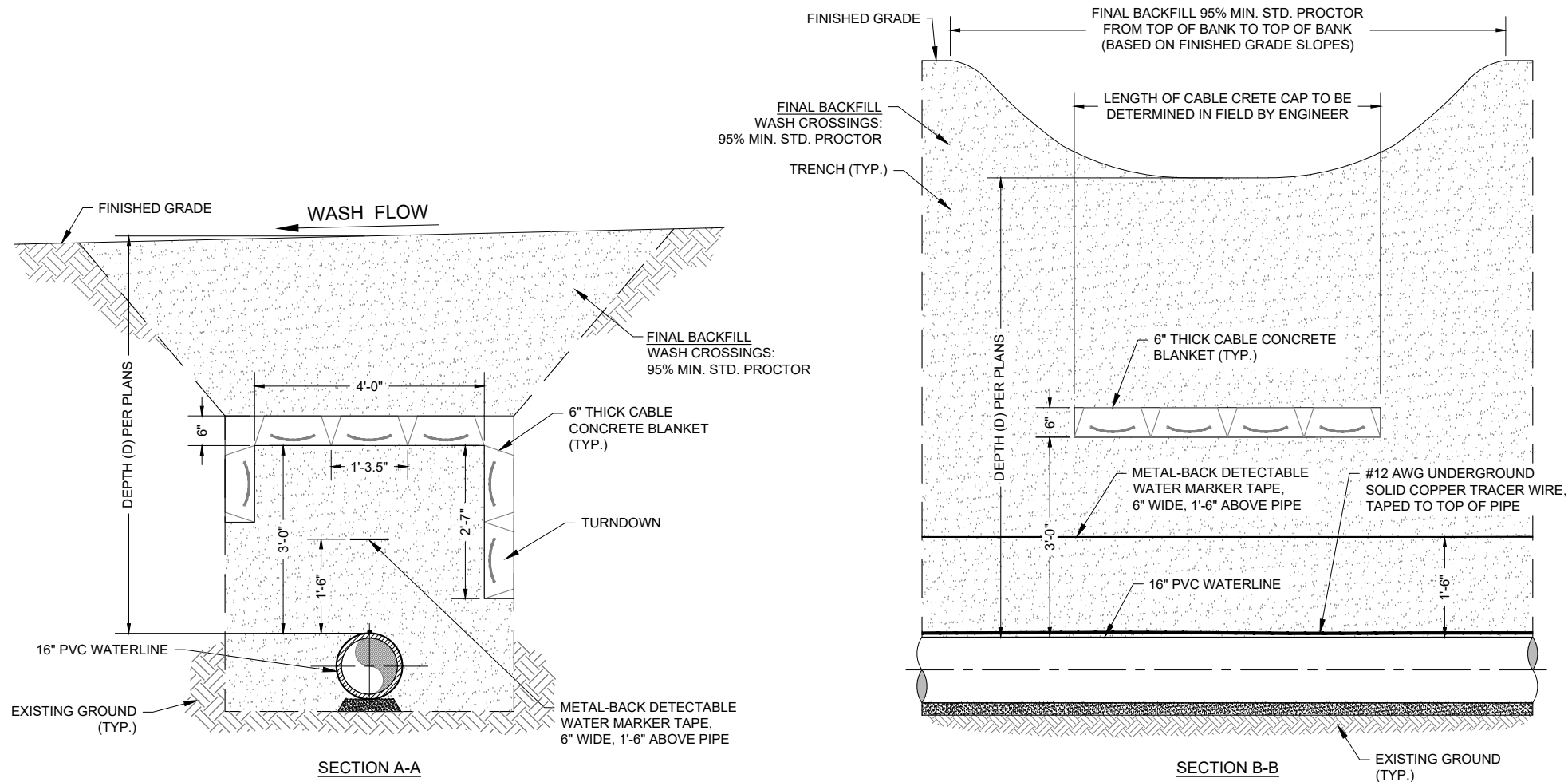
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TYPICAL 6" CC-45 CLOSED CELL CABLE CONCRETE DETAIL
NOT TO SCALE



- 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.



TYPICAL BURIED 6" CABLE CONCRETE MATTRESS FOR WASH CROSSINGS
NOT TO SCALE

Revision	Date	Description	By	CHKD

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Client: The Navajo Nation
Location: Coyote Canyon, NM

EROSION CONTROL DETAILS (2 OF 3)
NAVAJO GALLUP WATER SUPPLY PROJECT
BEACON BISTI N9 - REACH 10.1
MCKINLEY COUNTY, NEW MEXICO

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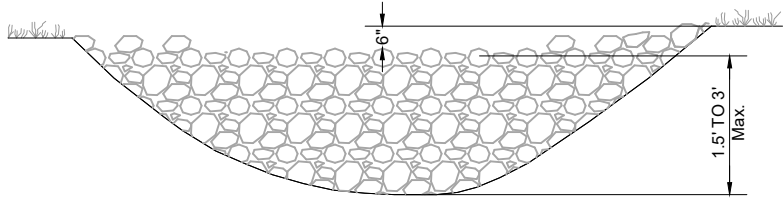
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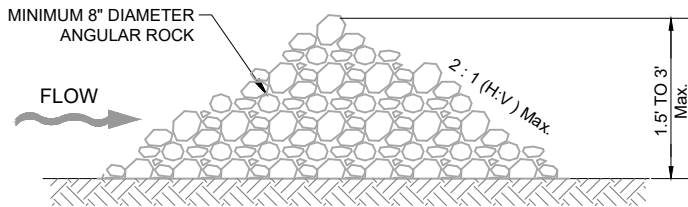
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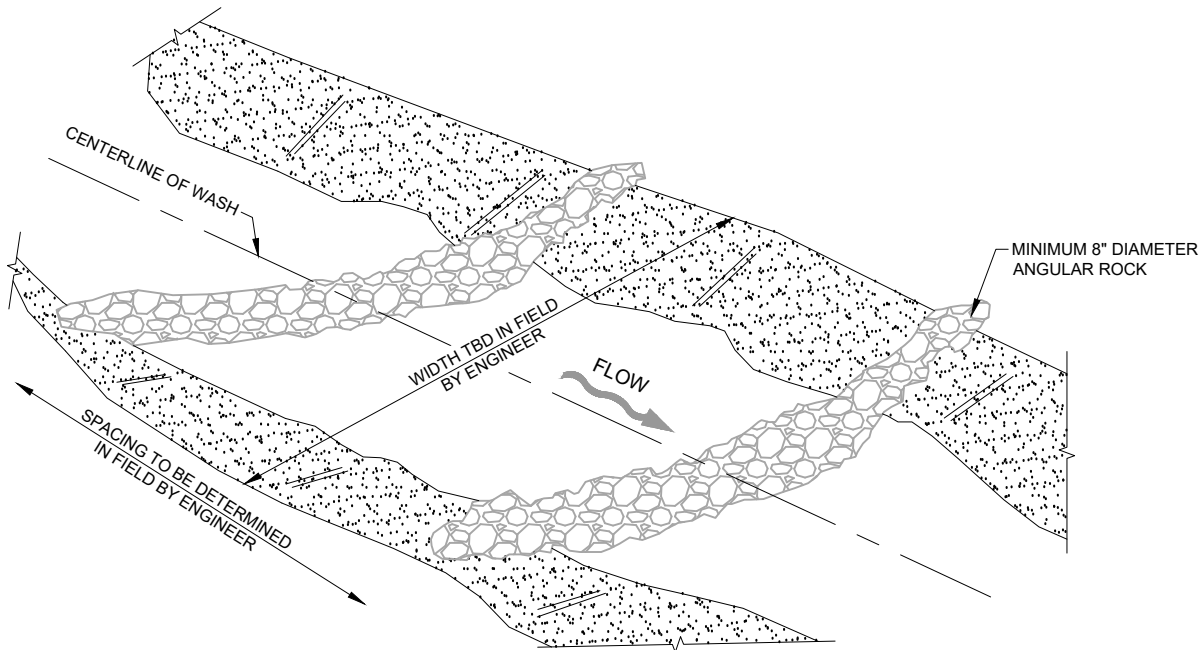
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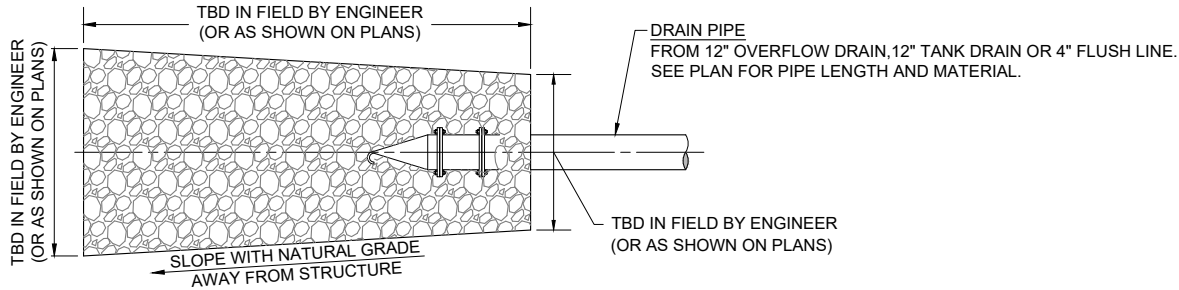
ELEVATION VIEW



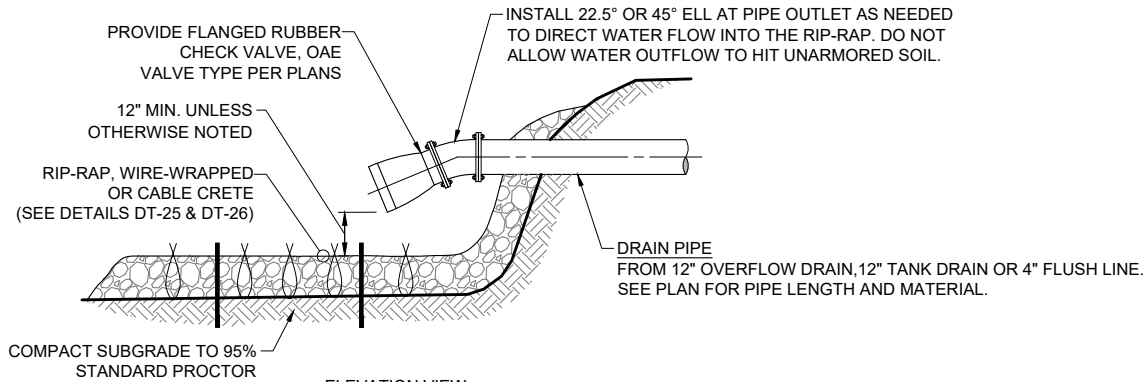
TYPICAL ROCK DAM SECTION



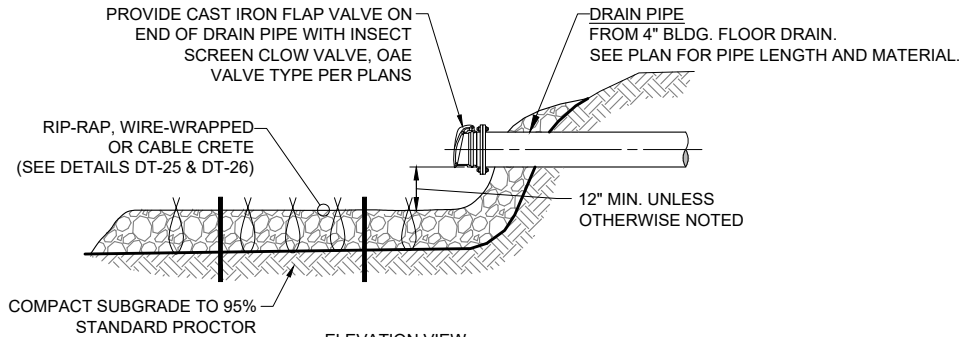
ROCK CHECK DAM DETAIL
NOT TO SCALE



PLAN VIEW



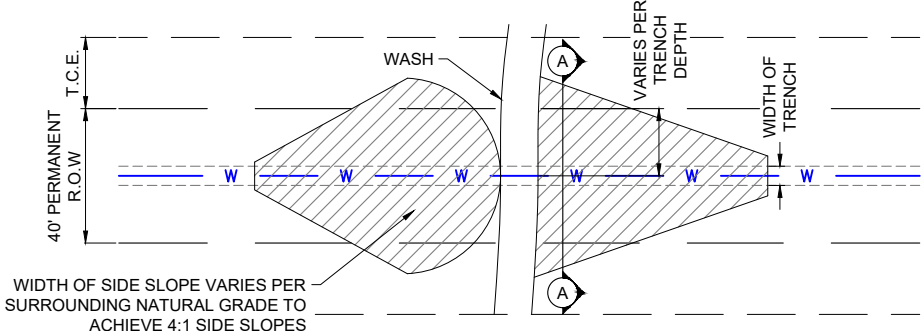
ELEVATION VIEW



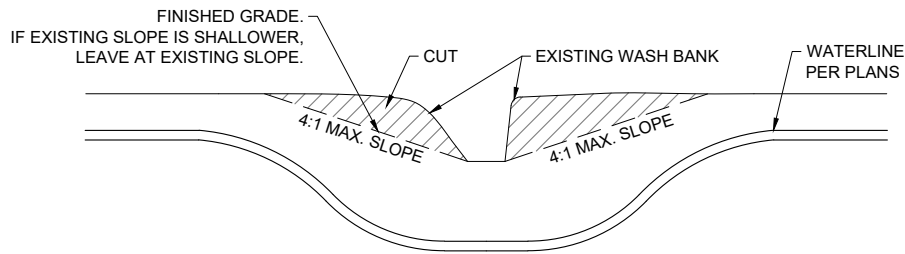
ELEVATION VIEW

TYPICAL SPLASH PAD DETAIL

NOT TO SCALE



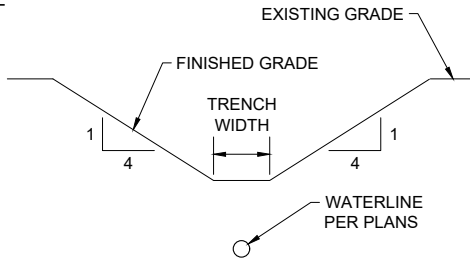
PLAN VIEW



PROFILE VIEW

WASH CROSSING GRADING DETAIL

NOT TO SCALE

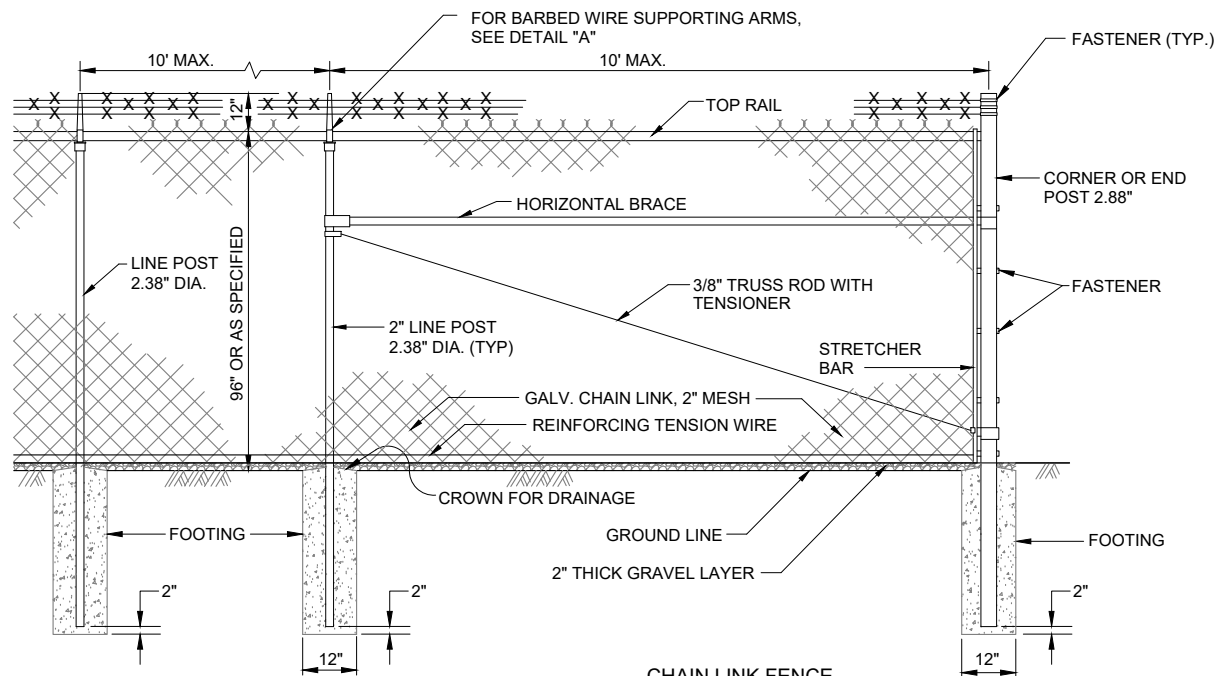


SECTION A-A

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

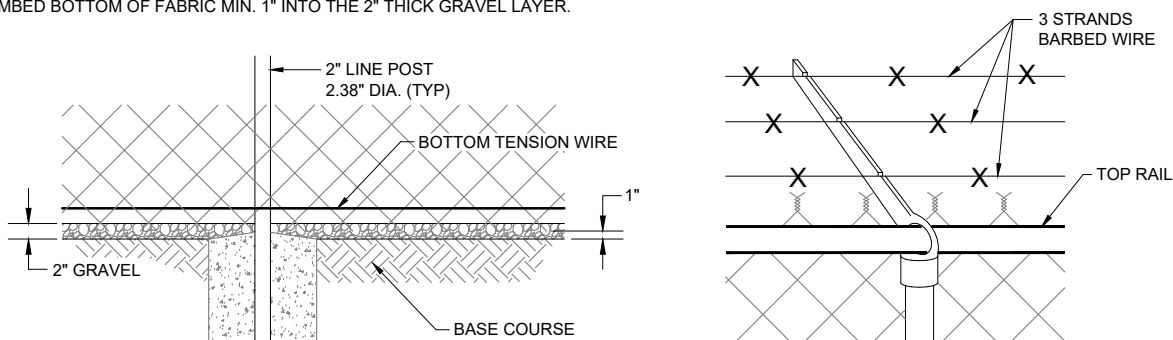
Revision	Date	Description	By	Chk'd

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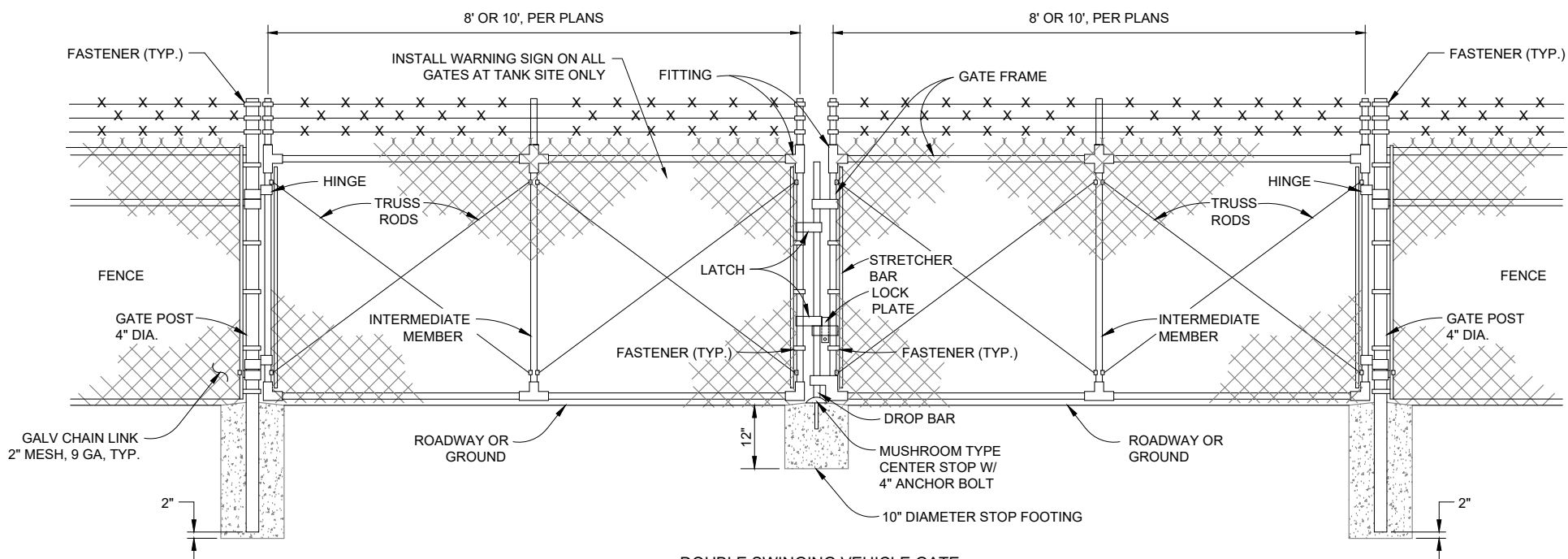
NOTES:

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.

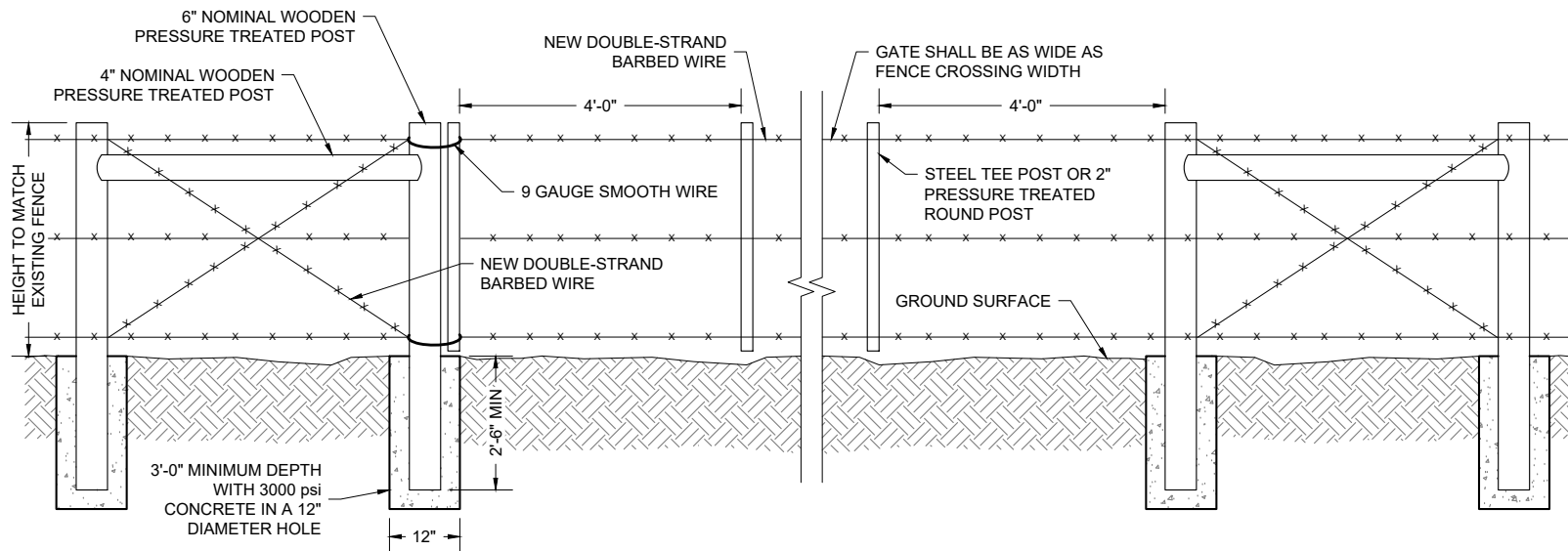


BASE COURSE AND GRAVEL DETAIL
NOT TO SCALE

DETAIL "A" SUPPORTING ARM & BARBED WIRE
NOT TO SCALE



DOUBLE SWINGING VEHICLE GATE
NOT TO SCALE



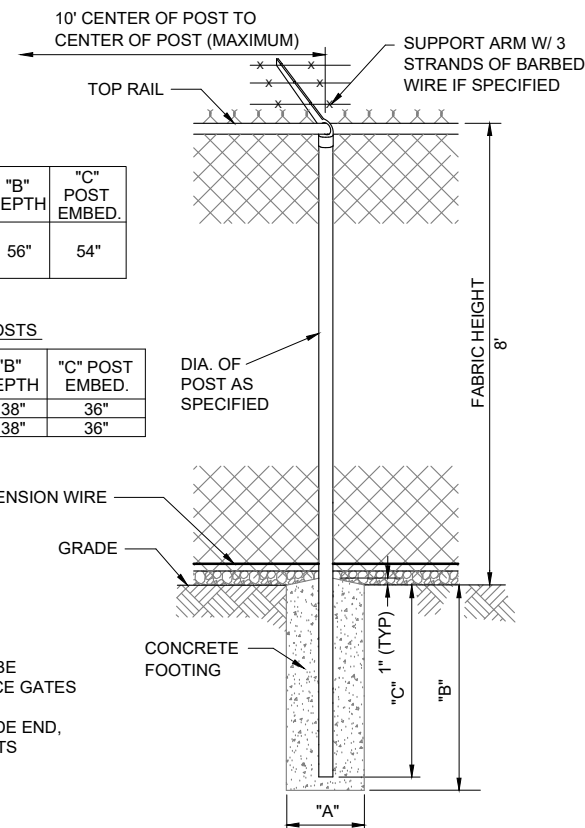
"RANCHER STYLE" GATE WITH H-BRACE
PULL ASSEMBLY AT FENCE CROSSING
NOT TO SCALE

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

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
NOT TO SCALE

Client: The Navajo Nation

Location: Coyote Canyon, NM

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Drawn: AAV
Checked: JMG

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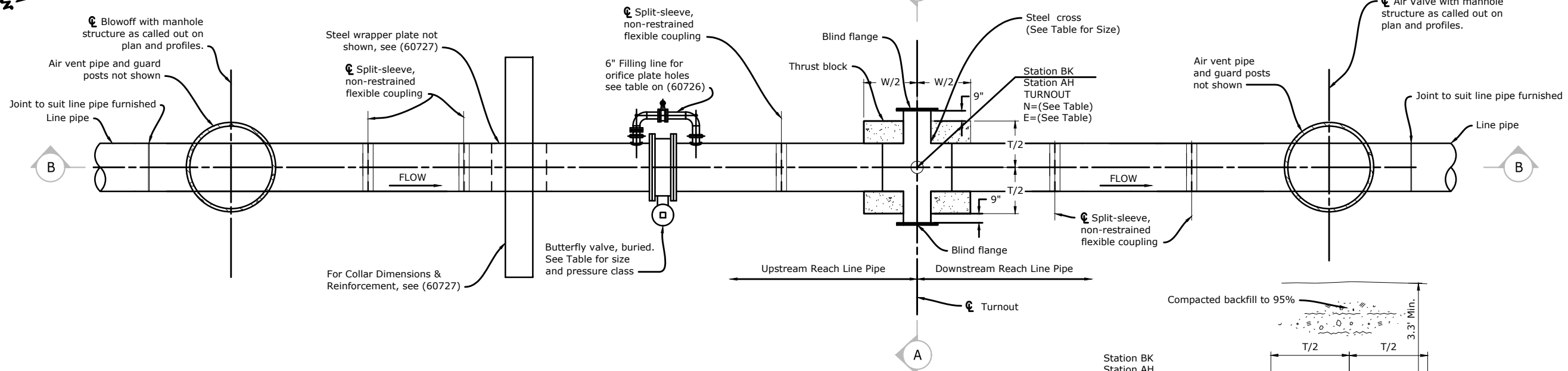
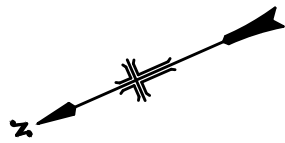
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Project No: 6922268
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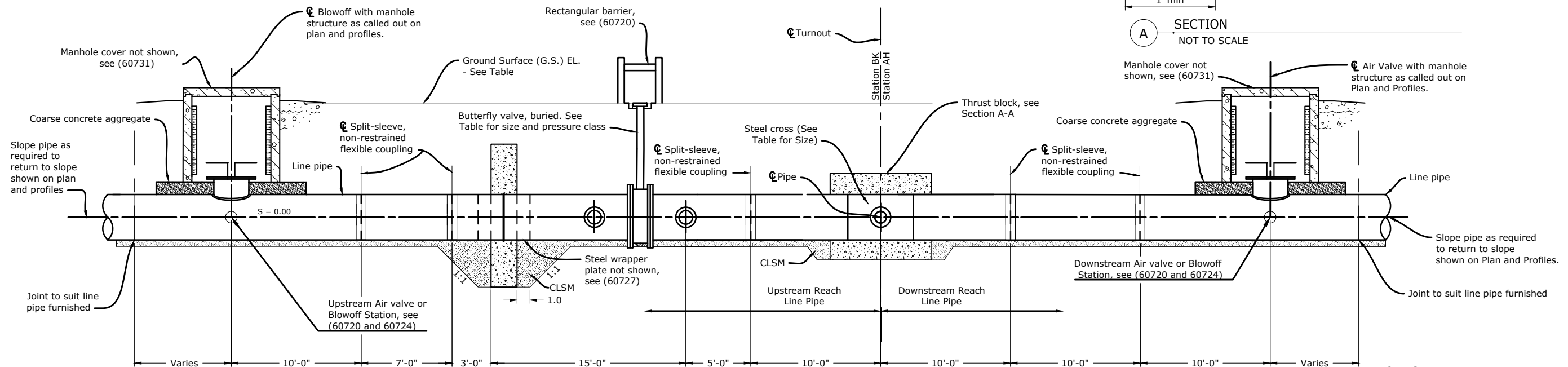
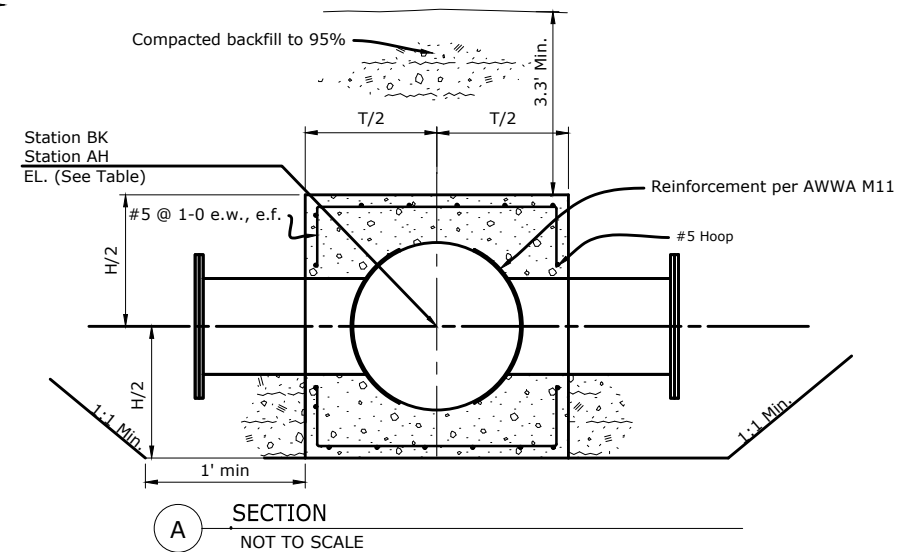
SMA



PLAN
NOT TO SCALE

REACH 10.1 Turnout Summary

Reach	Turnout Name	Flow (cfs)	Max. Transient Pressure (ft)	Cross (inch)	Valve Size (inch)	N	E	Upstream Reach Sta. BK	Downstream Reach Sta. AH	G.S. Elev.	CenterLine Elev.	H (ft)	T (ft)	W (ft)
10.1	REACH 10.1	3.50	302	48x48x16	48	1,772,882.45	2,478,983.29	90762+36.33	90762+36.33	6,049.90	6,043.20	6'-0"	6'-0"	6'-0"

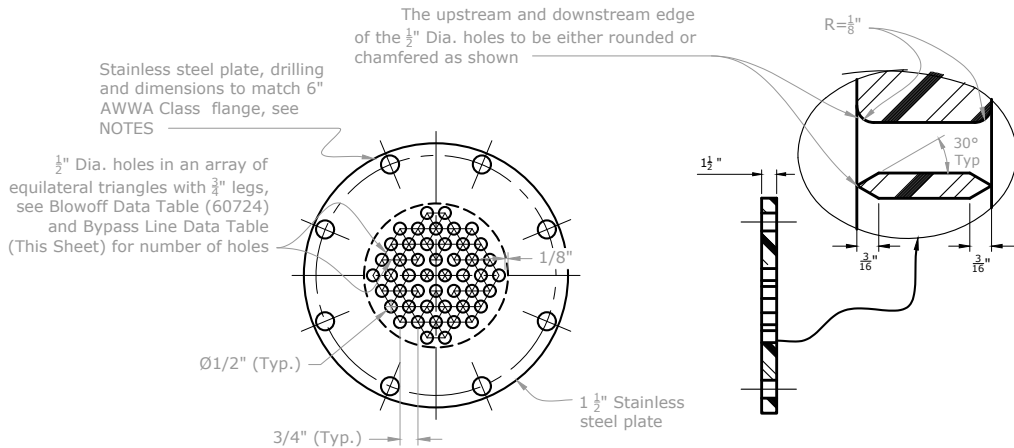


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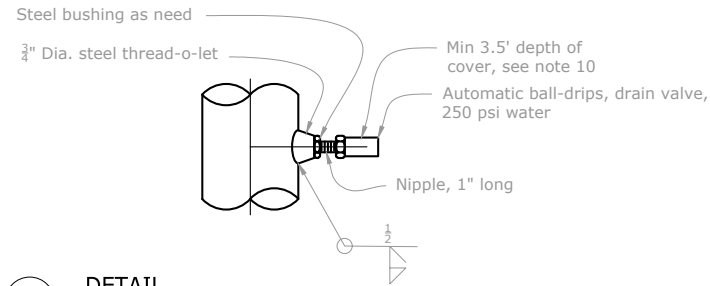
1. For Plan and Profiles, see (C-1).
2. Concrete compressive strength, f'_c , is 4,500 psi and specified yield point for reinforcement f_y , is 60,000 psi.
3. Outlet pipes to be blind flanged.
4. Turnout assembly piping is metallic.

Revision	Date	Description	By	Chk'd

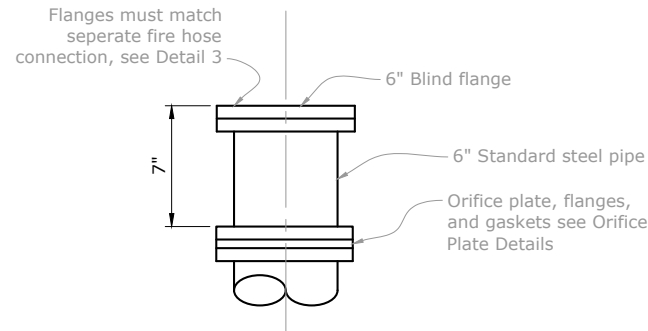
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2/17/2022 12:08:31 PM mrvh



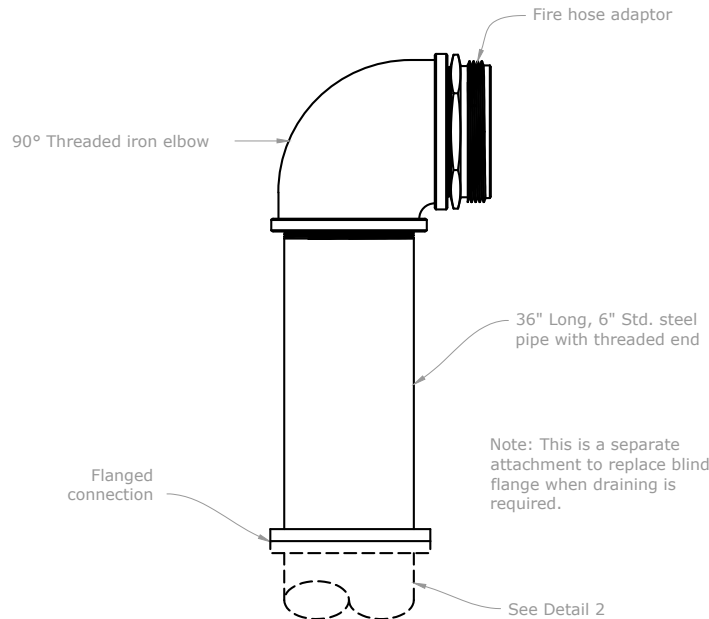
ORIFICE PLATE DETAILS



1 DETAIL
NOT TO SCALE



2 DETAIL



3 FIRE HOSE CONNECTION DETAIL
See Note 10

NOTES

1. The minimum steel cylinder thickness for the section of line pipe with the blowoff outlet shall be the thickness of the steel line pipe. For the steel line pipe thickness see the specification.
2. For coating and lining requirements, see specification paragraphs.
3. Install four Guard posts Type 1 around each blowoff as directed by the COR. Install posts in accordance with (40-D-60002).
4. See Plan and Profile drawings for location of blowoff stations and (C-1).
5. I.D. is inside diameter. O.D. is outside diameter.
6. For Flange ratings, CLASS 150.
7. Match all mating flanges with highest rated flange.
8. Minimum 3" of clearance between bottom of flange and coarse concrete aggregate.
9. Minimum 3.5' of ground cover from ground surface and centerline of automatic ball-drip, drain valve.

Revision	Date	Description	By	Chkd

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Client: The Navajo Nation
Location: Coyote Canyon, NM

BLOWOFF DETAILS (60723)
NAVAJO GALLUP WATER SUPPLY PROJECT
BEACON BISTI N9 - REACH 10.1
MCKINLEY COUNTY, NEW MEXICO

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Designed TTT	Drawn BOR	Checked JMG
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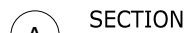
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Project No: 6922268
Sheet: DT-31



— SMA RESPECTFULLY REQUESTS RECLAMATION TO SIZE ORIFICE PLATE

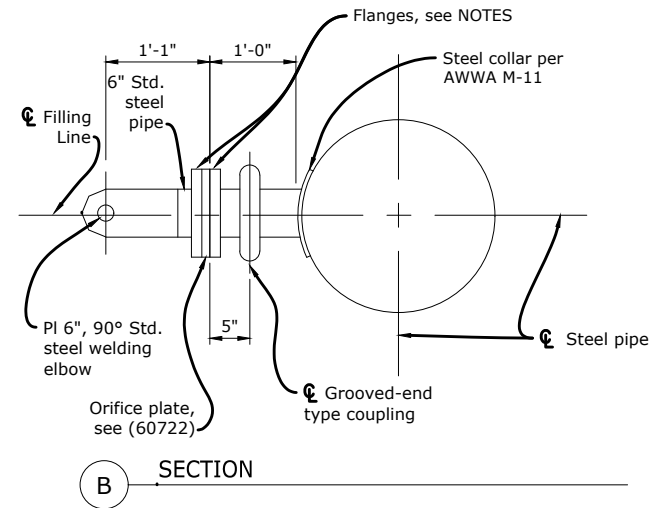
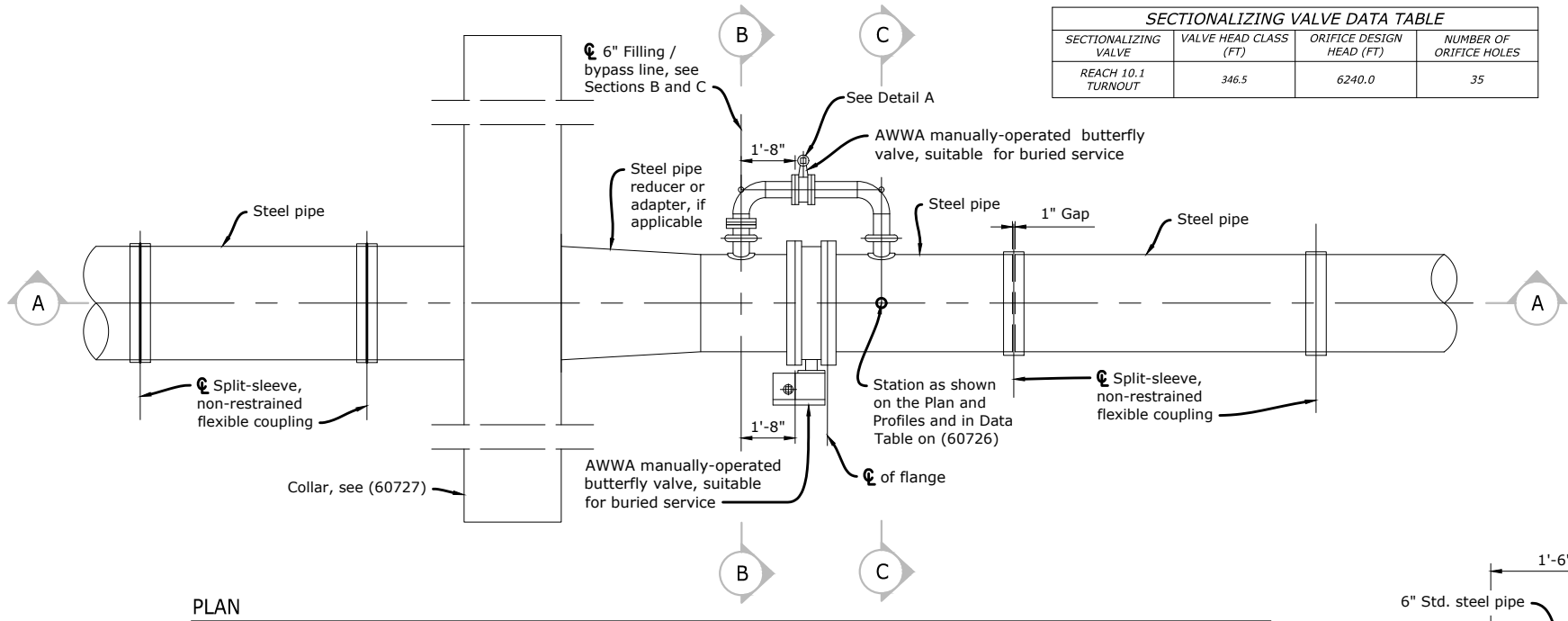


See Note 6

1. For blowoff locations, see Plan and Profiles (C-1).
2. For coating and lining requirements for std. steel pipe and fittings, see specification paragraphs.
3. For 6" flange ratings, see Table. Match all mating flanges with highest rated flange.
4. For orifice plate, see Blowoff Sections and Details (60723).
5. Any welding to be completed prior to cement mortar lining application.
6. For manholes installed within NMDOT ROW at Sta. 8260+00 and Sta. 8294+20, do not install guard posts. Design to withstand HS-20 loading.

P:\6-Beacon Bisti N9 Water Line (6922268)\CAD\civil\Reach 10.1 Plan Set\Construction Plans\Reach 10.1 BOR Sec Valve Install (60726).dwg
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SECTIONALIZING VALVE DATA TABLE			
SECTIONALIZING VALVE	VALVE HEAD CLASS (FT)	ORIFICE DESIGN HEAD (FT)	NUMBER OF ORIFICE HOLES
REACH 10.1 TURNOUT	346.5	6240.0	35

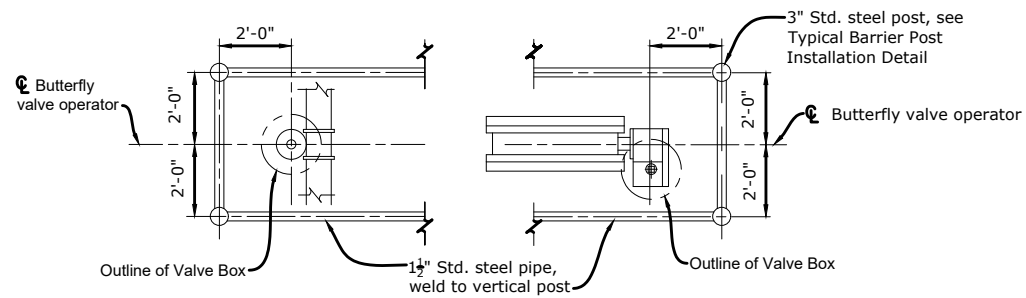
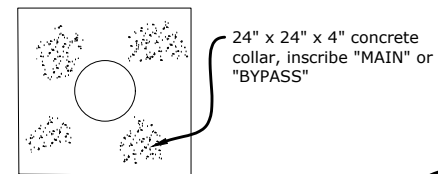
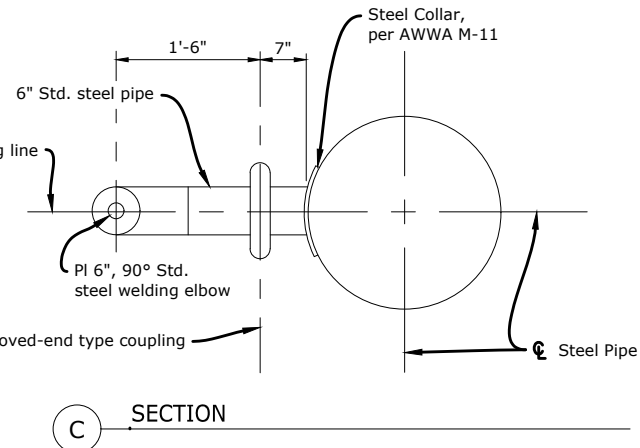
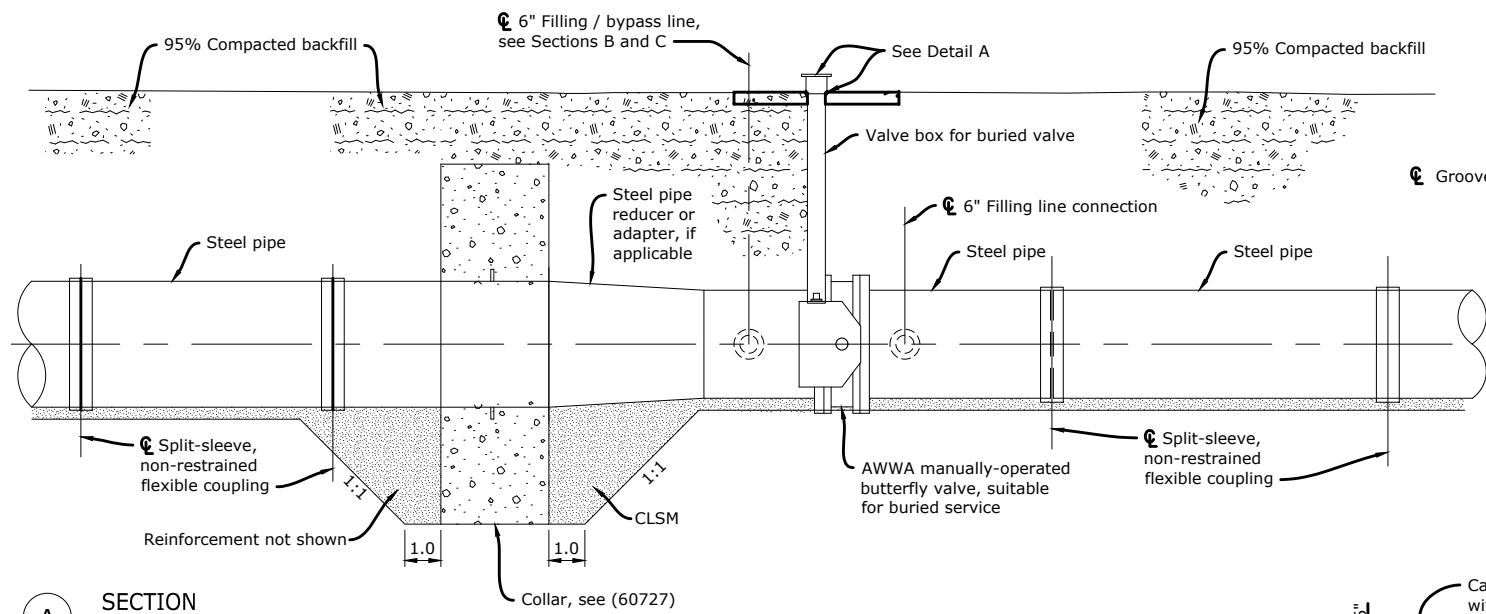


OPERATING CRITERIA

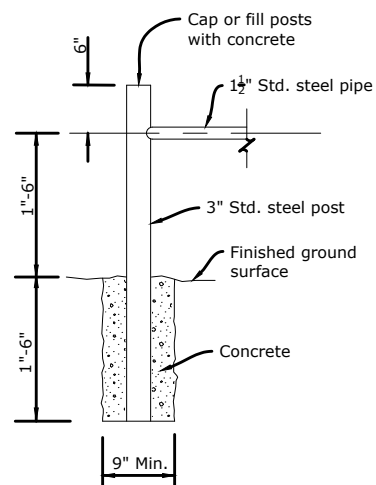
1. High performance Bypass butterfly valve shall be fully open when operated.
2. Excavation around blocking shall not occur when the pipeline is under hydrostatic pressure.

NOTES

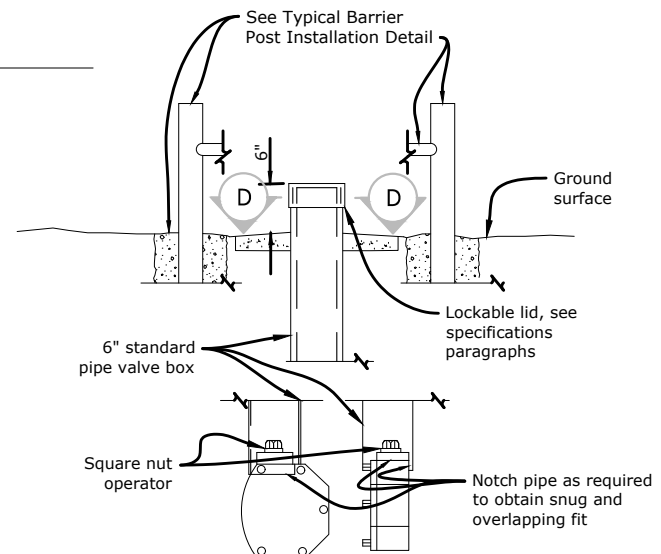
1. Drawing not to scale.
2. All sectionalizing valves will require a bypass.
3. The minimum steel cylinder thickness for the section of line pipe with the valve outlet shall be the thickness of the steel line pipe. For the steel line pipe thickness see the specification.
4. Piping next to butterfly valves may require 1" oversizing so that the applied interior lining will not reduce the inside dimension to a smaller size which could prevent the butterfly valve from opening. Valve bypass piping shall be epoxy lined.
5. For details of tapers, adaptors and collars, see (60727).
6. Flange class shall meet pressure requirement designated by adjacent line pipe. Flange drilling shall match mating flange.
7. For Flange and Valve ratings, see notes (60722).
8. For sectionalizing valve in NMDOT ROW at Sta. 8315+60, do not install barrier posts.



WELDED RECTANGULAR BARRIER



TYPICAL BARRIER POST INSTALLATION DETAIL



DETAIL A

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Client: The Navajo Nation
Location: Coyote Canyon, NM
SECTIONALIZING VALVE INSTALLATION (60726)
NAVAJO GALLUP WATER SUPPLY PROJECT
BEACON BISTI N9 - REACH 10.1
MCKINLEY COUNTY, NEW MEXICO

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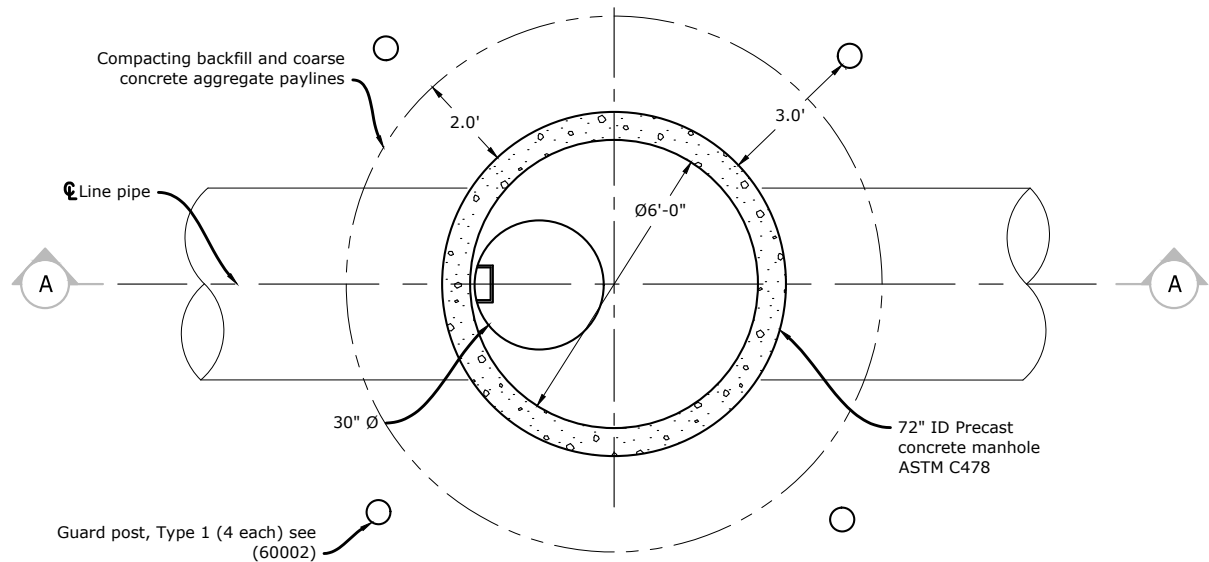
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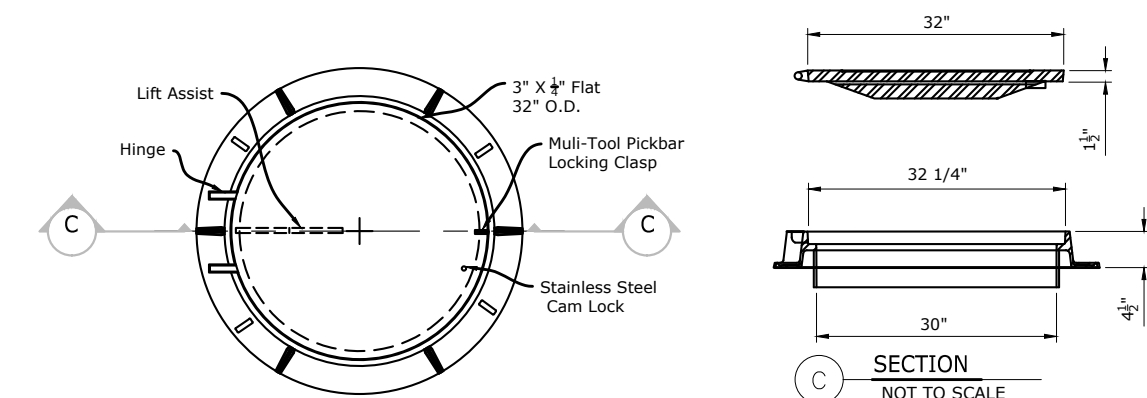
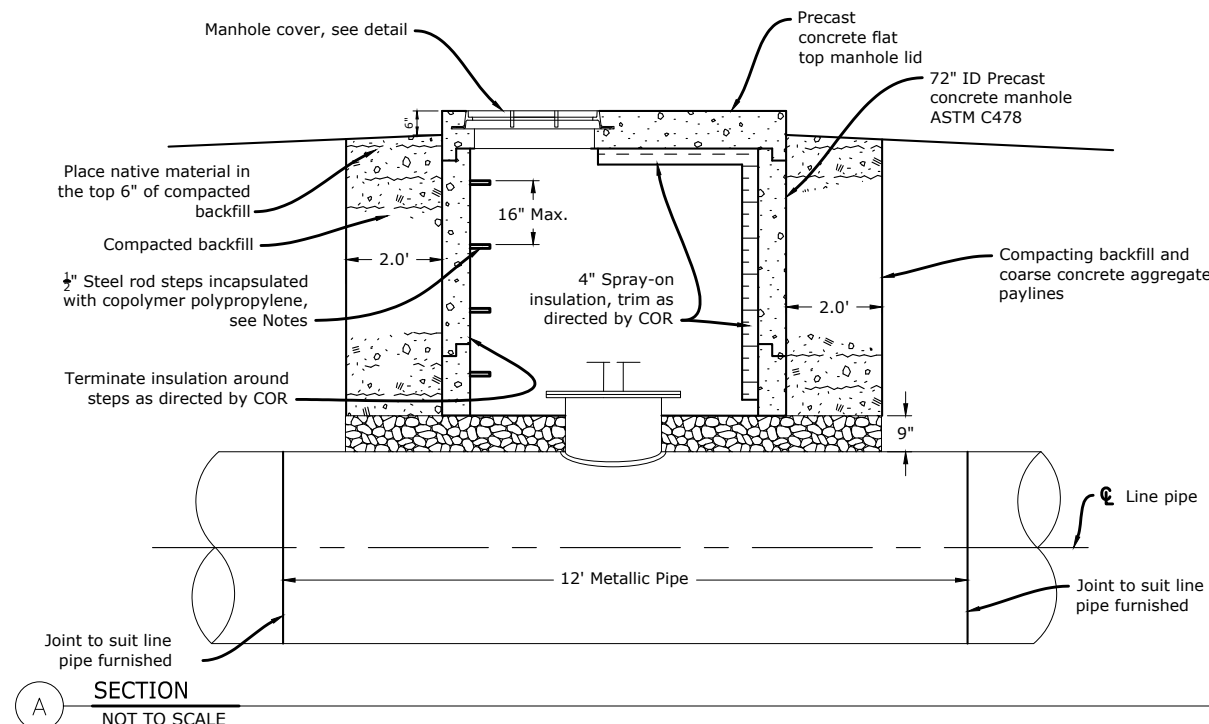
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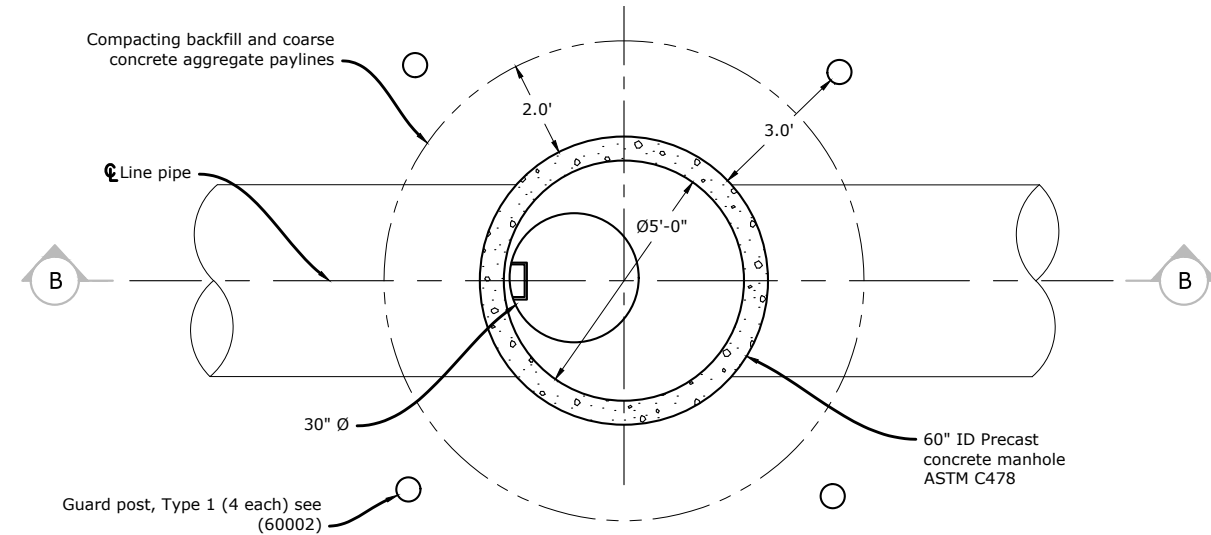
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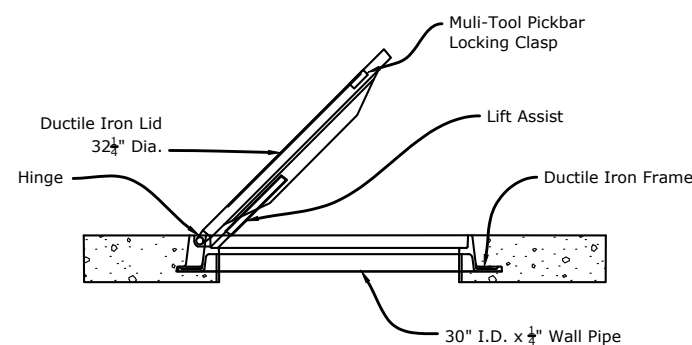
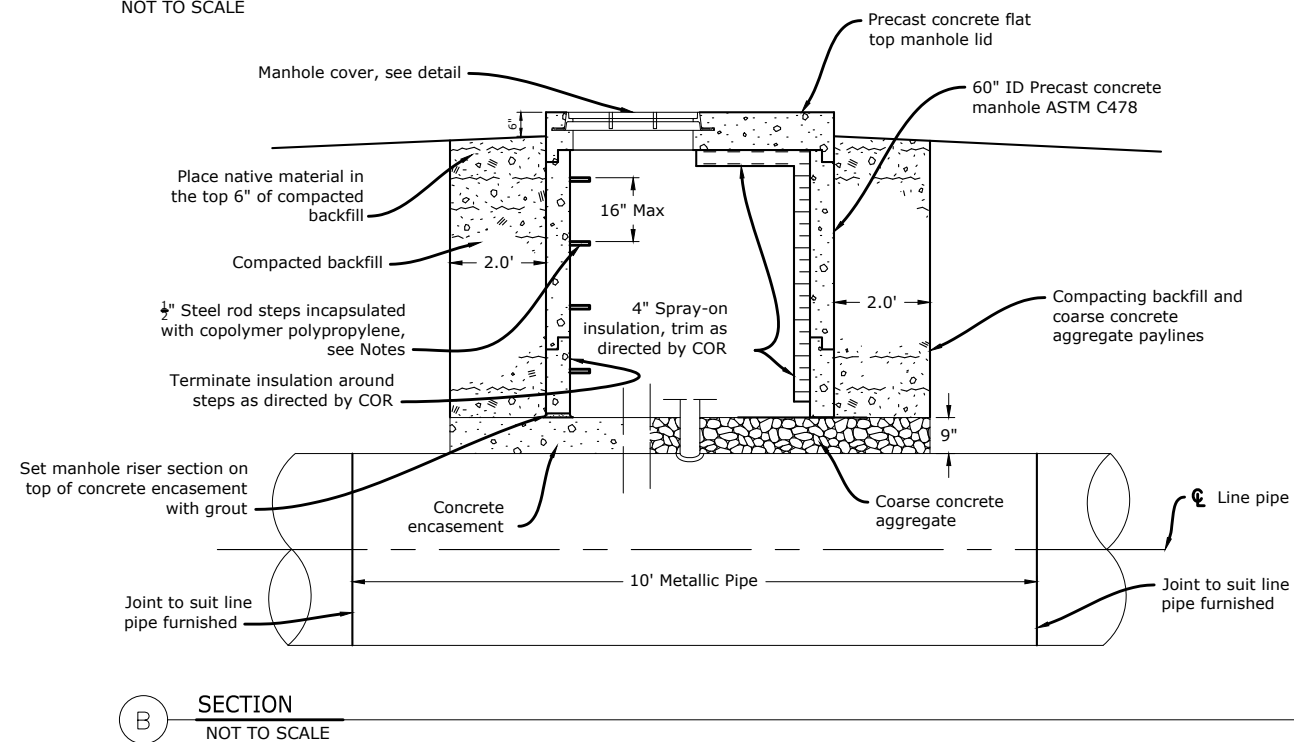
PLAN - 72" Ø MANHOLE
NOT TO SCALE



MANHOLE COVER DETAILS
NOT TO SCALE



PLAN - 60" Ø MANHOLE
NOT TO SCALE



NOTES

- Manhole steps shall be made of 1/2-inch steel rod encapsulated with copolymer polypropylene or approved equal and shall conform to ASTM C478. Steps shall have minimum projections of 4-inches, spaced no more than 16" apart, minimum overall widths of 14 inches and anchored into the walls at least 3 1/2 inches deep.
- Manhole cover shall be provided with a lockable lid.
- Drawing not to scale.

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Revision	Date	Description	By	Chk'd

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Client: The Navajo Nation
Location: Coyote Canyon, NM

PRECAST CONCRETE MANHOLE DETAILS (60731)
NAVAJO GALLUP WATER SUPPLY PROJECT
BEACON BISTI N9 - REACH 10.1
MCKINLEY COUNTY, NEW MEXICO

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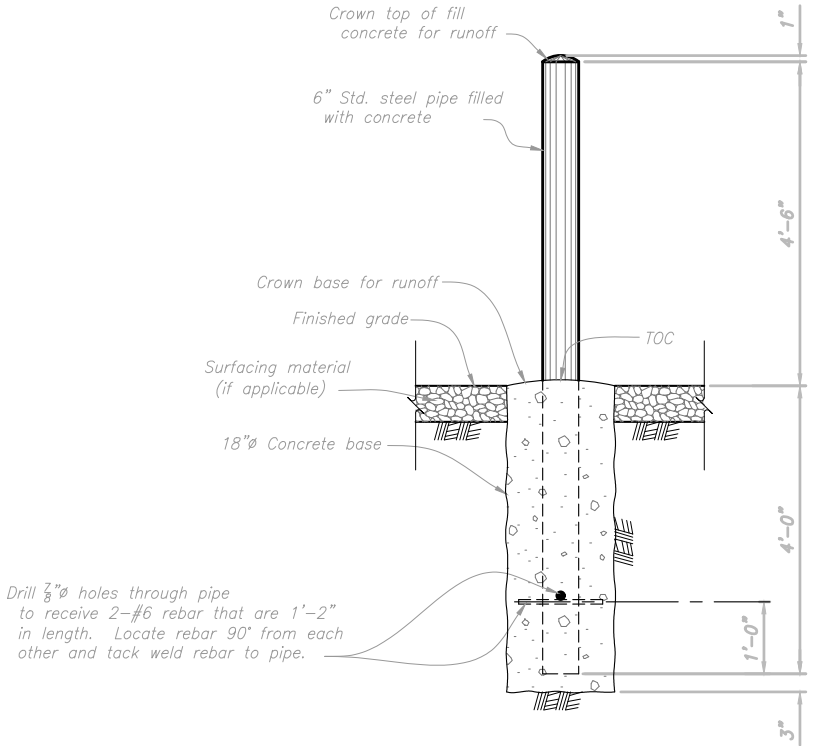
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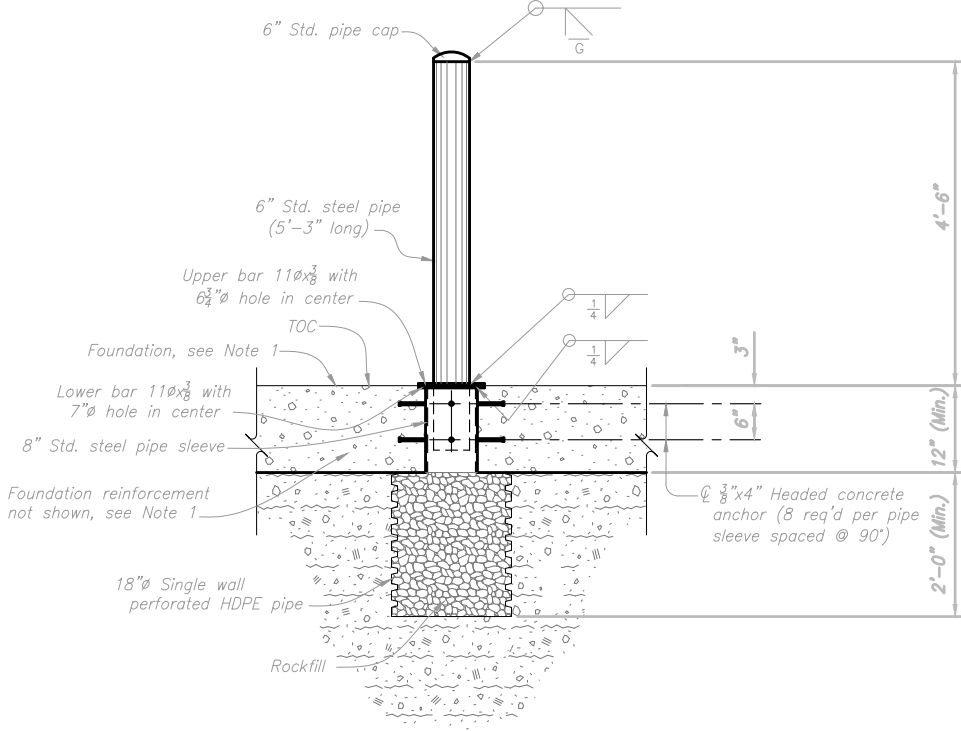
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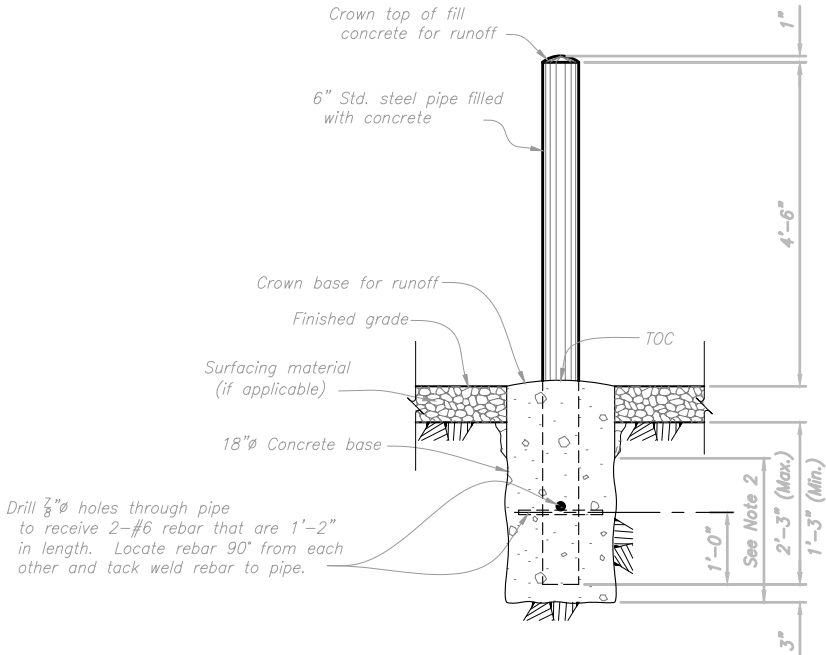
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Project No:	6922268
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GUARD POST, TYPE I
FOR FOUNDATION EMBEDDED IN COMMON SOIL CONDITION
DO NOT GALVANIZE STEEL PIPE



GUARD POST, TYPE III
REMOVABLE GUARD POST AND SLEEVE FOR SLAB-ON-GRADE CONDITION
GALVANIZE PIPE SLEEVE
DO NOT GALVANIZE STEEL PIPE



GUARD POST, TYPE II
FOR FOUNDATION EMBEDDED IN ROCK CONDITION
DO NOT GALVANIZE STEEL PIPE

GENERAL NOTES

ASTM denotes American Society for Testing and Materials.

AWS denotes American Welding Society.

AWWA denotes American Water Works Association.

COR denotes Contracting Officer's Representative.

HDPE denotes high density polyethylene.

Max. denotes maximum.

Min. denotes minimum.

psi denotes pounds per square inch.

Rebar denotes concrete reinforcement.

Std. denotes standard.

TOC denotes top of concrete.

Typ. denotes typical.

All welds, sections and details are typical for all similar conditions.

Coat steel guard post and upper bar per specifications or as directed by COR.

Unless noted otherwise, galvanize pipe sleeve and lower bar after fabrication per ASTM A385.

Fabricated Metalwork:

Bars _____ ASTM A36
Std. Steel Pipe _____ ASTM A53, Grade B
Rebar _____ ASTM A615

HDPE Pressure Pipe: ASTM F405.

Unless noted otherwise, make all welds continuous and in the shop.

Unless noted otherwise, fabricator shall determine edge preparation and root opening for groove welds.

Arc-Welding Electrodes: Filler metal and required shielding gases or fluxes shall be per AWS D1.1 with filler metal for steel having a minimum tensile strength of 70,000 psi.

Rockfill per ASTM C33, Coarse Aggregate, Size No. 57.

Unless noted otherwise, concrete structural design is based on concrete with a minimum compressive strength of 2,500 psi at 28 days and reinforcement with a minimum yield strength of 60,000 psi.

NOTES

- Foundation design engineer shall verify foundation stability and the concrete and reinforcement strength requirements.
- 12" Embedment in moderately weathered or less weathered rock and 24" embedment in intensely-to-moderately weathered or more weathered rock.
- Install guard posts at locations shown on specifications drawings and/or as directed by COR.

Revision	Date	Description	By	CHK'd

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Client: The Navajo Nation
Location: Coyote Canyon, NM
GUARD POST DETAILS (60002)
NAVAJO GALLUP WATER SUPPLY PROJECT
BEACON BISTI N9 - REACH 10.1
MCKINLEY COUNTY, NEW MEXICO

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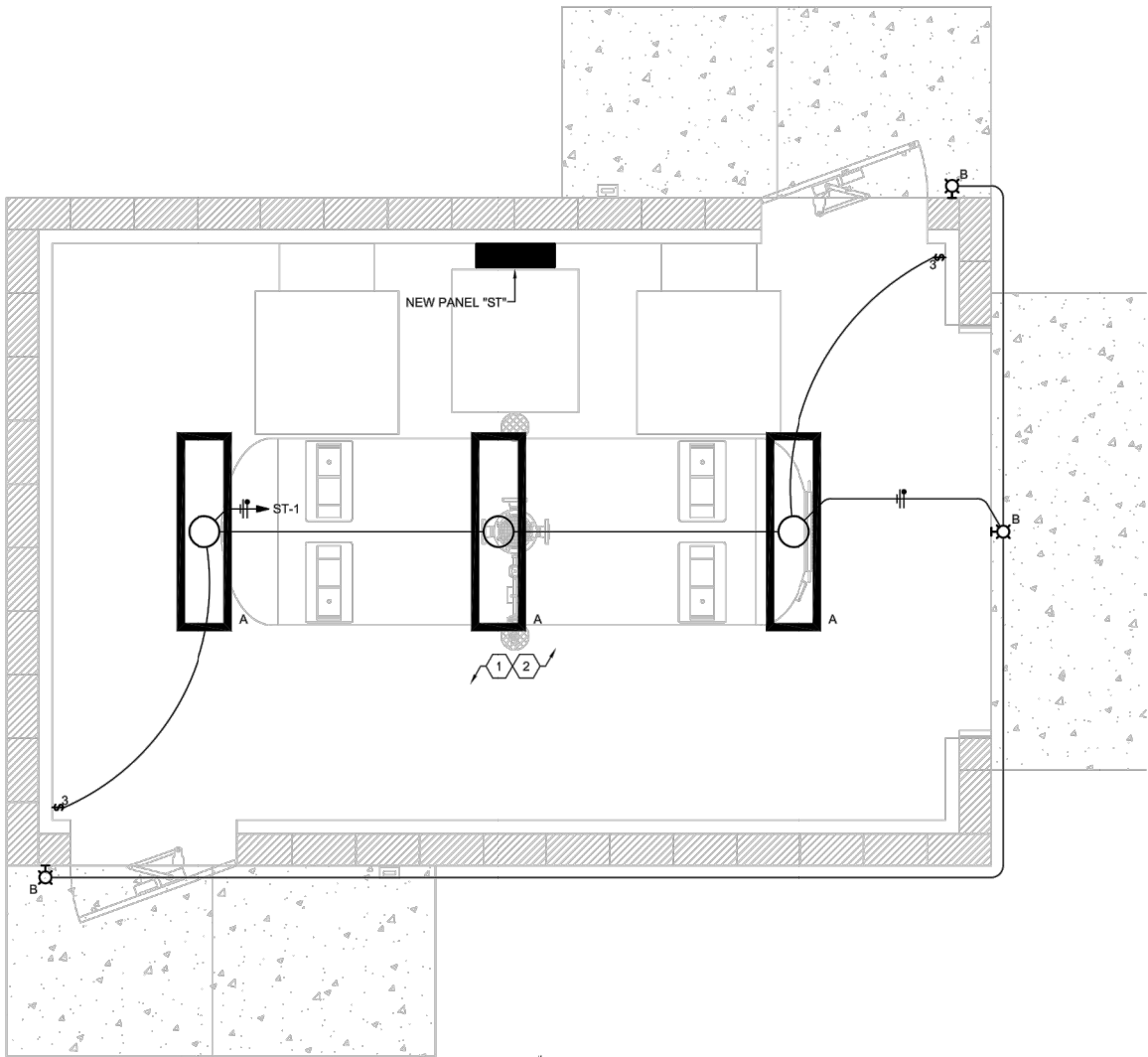
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Project No: 6922268
Sheet: **DT-36**



SURGE TANK BUILDING LIGHTING PLAN

LIGHT FIXTURE SCHEDULE			
TYPE	FIXTURE DESCRIPTION	LAMPS	MOUNTING
A	VAPOR TIGHT LED FIXTURE, UL LISTED FOR WET LOCATIONS, UNIVERSAL VOLTAGE METALUX #4VT2-LD5-4-DR-UNV-L840-WL-U	LED (30W) 4000°K 4000 LM	CEILING SURFACE
B	LED WALL PACK, FULL CUTOFF, PHOTOCELL, 120V LUMARK #LDWP-FC-4B-120V-PE	32W LED	SURFACE MOUNTED AT +8'-0" A.F.F.



COMcheck Software Version 4.1.5.3

Interior Lighting Compliance Certificate

Project Information

Energy Code: 2018 IECC
Project Title: New Construction
Project Type: New Construction

Construction Site: Owner/Agent: Designer/Contractor:

Additional Efficiency Package(s)

Credits: 1.0 Required 0.0 Proposed

Allowed Interior Lighting Power

Area Category	Floor Area (ft ²)	Allowed Watts / ft ²	Allowed Watts (B X C)
1-Common Space Types:Electrical/Mechanical	227	0.43	98
		Total Allowed Watts =	98

Proposed Interior Lighting Power

Fixture ID : Description / Lamp / Wattage Per Lamp / Ballast	B Lamps/ Fixture	C # of Fixtures	D Fixture Watt.	E (C X D)
1-Common Space Types:Electrical/Mechanical				
LED 1: Other:	1	3	30	90
		Total Proposed Watts =	90	

Interior Lighting PASSES: Design 8% better than code

Interior Lighting Compliance Statement

Compliance Statement: The proposed interior lighting design represented in this document is consistent with the building plans, specifications, and other calculations submitted with this permit application. The proposed interior lighting systems have been designed to meet the 2018 IECC requirements in COMcheck Version 4.1.5.3 and to comply with any applicable mandatory requirements listed in the Inspection Checklist.

Thomas F. Ruehle, P.E.

Name - Title

Signature

Date

Project Title: F:\21359 - Reach Jan 10.1 Surge Tank\Electrical\2-Design\5-Calculations\ComCheck.cck Report date: 10/07/21
Data filename: F:\21359 - Reach Jan 10.1 Surge Tank\Electrical\2-Design\5-Calculations\ComCheck.cck Page: 1 of 7



COMcheck Software Version 4.1.5.3

Exterior Lighting Compliance Certificate

Project Information

Energy Code: 2018 IECC
Project Title: New Construction
Project Type: New Construction
Exterior Lighting Zone: 1 (Developed rural area (L21))

Construction Site: Owner/Agent: Designer/Contractor:

Allowed Exterior Lighting Power

Area/Surface Category	B Quantity	C Allowed Watts / Unit	D Tradable Wattage	E Allowed Watts (B X C)
Pedestrian and vehicular entrances and exits	15 ft of door	14	Yes	210
		Total Tradable Watts (a) =	210	
		Total Allowed Watts =	210	
		Total Allowed Supplemental Watts (b) =	0	

(a) Wattage tradeoffs are only allowed between tradable areas/surfaces.

(b) A supplemental allowance equal to 350 watts may be applied toward compliance of both non-tradable and tradable areas/surfaces.

Proposed Exterior Lighting Power

Fixture ID : Description / Lamp / Wattage Per Lamp / Ballast	B Lamps/ Fixture	C # of Fixtures	D Fixture Watt.	E (C X D)
Pedestrian and vehicular entrances and exits (15 ft of door width): Tradable Wattage				
LED 1: Other:	1	3	30	90
		Total Tradable Proposed Watts =	90	

Exterior Lighting PASSES: Design 83% better than code

Exterior Lighting Compliance Statement

Compliance Statement: The proposed exterior lighting design represented in this document is consistent with the building plans, specifications, and other calculations submitted with this permit application. The proposed exterior lighting systems have been designed to meet the 2018 IECC requirements in COMcheck Version 4.1.5.3 and to comply with any applicable mandatory requirements listed in the Inspection Checklist.

Thomas F. Ruehle, P.E.

Name - Title

Signature

Date

Project Title: F:\21359 - Reach Jan 10.1 Surge Tank\Electrical\2-Design\5-Calculations\ComCheck.cck Report date: 10/07/21
Data filename: F:\21359 - Reach Jan 10.1 Surge Tank\Electrical\2-Design\5-Calculations\ComCheck.cck Page: 2 of 7

KEYED NOTES

- ALL CONDUITS SHALL BE RUN OVERHEAD.
- ALL EXPOSED CONDUITS INSTALLED WITHIN THE BUILDING SHALL BE RIGID STEEL CONDUITS WITH THREADED CONDUIT BODIES. ALL EQUIPMENT ENCLOSURES AND CONDUIT INSTALLATION SHALL BE RATED FOR WET LOCATIONS.



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Client: The Navajo Nation

Location: Coyote Canyon, NM
SURGE TANK - LIGHTING PLAN
NAVAJO GALLUP WATER SUPPLY PROJECT
BEACON BISTI N9 - REACH 10.1
MCKINLEY COUNTY, NEW MEXICO



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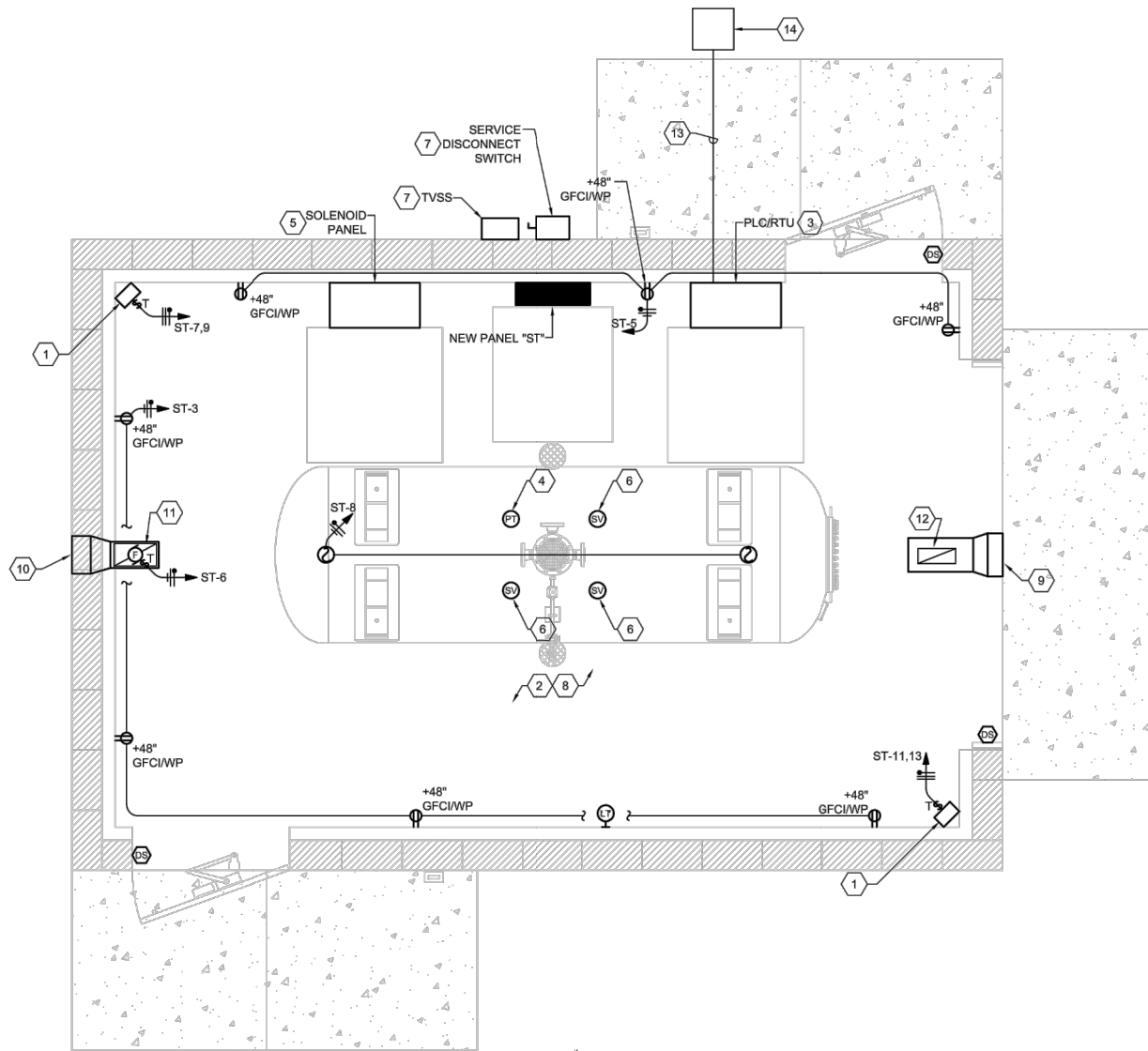
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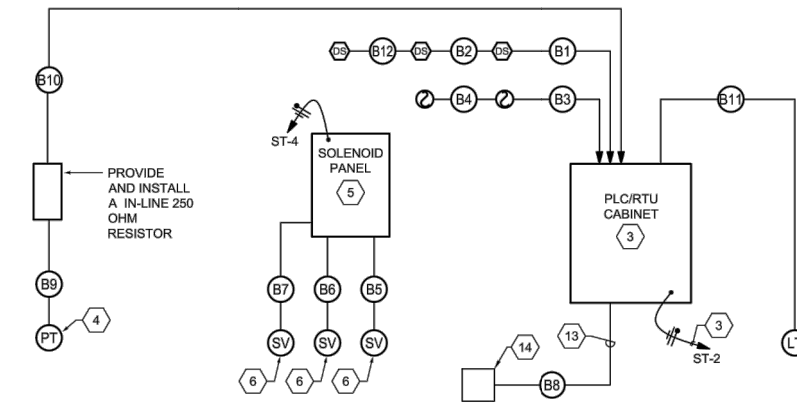
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Project No: 6922268

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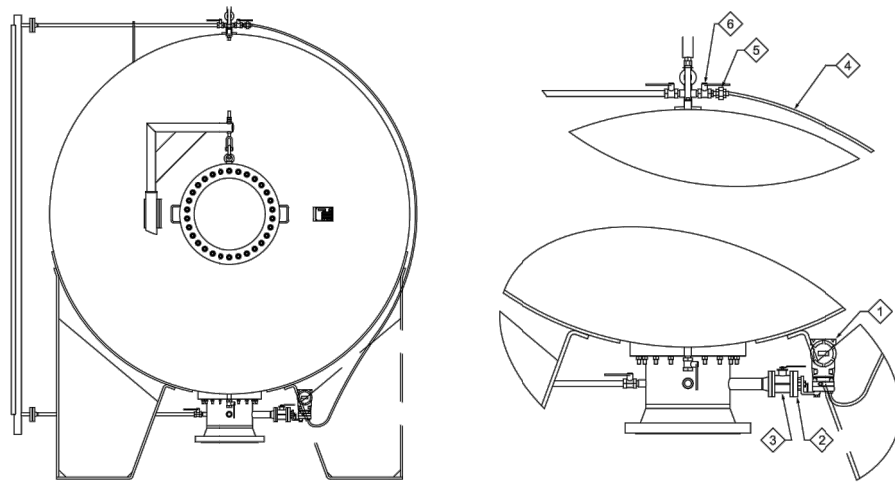


SURGE TANK BUILDING POWER AND SPECIAL
SYSTEMS PLAN



SURGE TANK BUILDING - CONTROL RISER DIAGRAM

SCALE: NONE



ROSEMOUNT - PRESSURE DIFFERENTIAL TRANSMITTER - CONNECTION DETAIL

SCALE: NONE

KEYED NOTES

1. PROVIDE AND INSTALL A 2.6 KW 240 VOLTS, SINGLE PHASE ELECTRIC WALL MOUNTED HEATER WITH INTEGRAL THERMOSTAT. HOMERUN 3 # 10 - 1/2" CONDUIT TO CIRCUIT INDICATED. HEATER SHALL BE AS MANUFACTURED BY CHROMALOX #HVH-02-1-00-TL-D-00-0-0-S-HVW-1
2. ALL CONDUITS SHALL BE RUN OVERHEAD.
3. NEW PLC/FIBER OPTIC TRANSMITTER CABINET. CABINET SHALL BE A NEMA 4X ENCLOSURE. PLC CONFIGURED TO OWNER STANDARDS AND REQUIREMENTS. REFER TO SHEETS E-31 THROUGH E-33 AND SPECIFICATIONS. MOUNT ON WALL ADJACENT TO PLC CABINET. REFER TO CONTROL WIRING SCHEDULE ON SHEET E-51 FOR ADDITIONAL INFORMATION.
4. FIELD COORDINATE THE LOCATION OF THE PRESSURE TRANSMITTER PRIOR TO THE EXTENSION OF THE CONTROL WIRING. PRESSURE TRANSMITTER SHALL BE AS MANUFACTURED BY ROSEMOUNT # 3051L, RANGE 2-5, COORDINATE ALL ADDITIONAL OPTIONS REQUIRED FOR A COMPLETE FUNCTIONAL SYSTEM WITH THE EQUIPMENT SUPPLIER.
5. FIELD COORDINATE THE LOCATION OF THE SOLENOID VALVE CONTROL PANEL PRIOR TO THE EXTENSION OF POWER AND CONTROL WIRING. SOLENOID LEVEL INDICATION SYSTEM CONTROL PANEL SHALL BE AS MANUFACTURED BY GOLDBER, NEMA 3R ENCLOSURE.
6. FIELD COORDINATE THE LOCATION OF THE SURGE TANK SOLENOID VALVE LOCATIONS PRIOR TO THE EXTENSION OF CONTROL WIRING. SOLENOID VALVES SHALL BE AS MANUFACTURED BY ASCO, SERIES 8210, 304 STAINLESS STEEL, #238610 & SERIES 8262, 304 STAINLESS STEEL, # 238210. COORDINATE ALL ADDITIONAL OPTIONS REQUIRED FOR A COMPLETE FUNCTIONAL SYSTEM WITH THE SUPPLIER.
7. REFER TO POWER RISER DIAGRAM ON SHEET E-51 FOR SERVICE EQUIPMENT SIZES AND WIRING.
8. ALL EXPOSED CONDUITS INSTALLED WITHIN THE BUILDING SHALL BE RIGID STEEL CONDUITS WITH THREADED CONDUIT BODIES. ALL EQUIPMENT ENCLOSURES AND CONDUIT INSTALLATION SHALL BE RATED FOR WET LOCATIONS.
9. 18x18 AIR INTAKE GRILLE - RUSKIN ELF375 OR EQUAL. INSTALL IN GABLE BETWEEN ROOF TRUSSES. DIMENSIONS MAY BE MODIFIED TO EQUIVALENT PERFORMANCE TO ACCOMMODATE STRUCTURAL CONSTRAINTS. PROVIDE DUCTWORK TRANSITION AS REQUIRED.
10. 18x18 EXHAUST GRILLE - RUSKIN ELF375 OR EQUAL. INSTALL IN GABLE BETWEEN ROOF TRUSSES. DIMENSIONS MAY BE MODIFIED TO EQUIVALENT PERFORMANCE TO ACCOMMODATE STRUCTURAL CONSTRAINTS. PROVIDE DUCTWORK TRANSITION FROM EXHAUST FAN.
11. CEILING EXHAUST FAN. GREENHECK SP-A 1050. 885 CFM, .0375"WC, 5.5 SONES, 420 WATTS, 6.3 AMPS. OVERALL DIMENSIONS 14.5" TALL, 23.75"WIDE, 14.5" DEEP. CONTROL FROM LINE VOLTAGE WALL THERMOSTAT WITH ON/OFF OVERRIDE.
12. 12X24 TITUS MODEL EGC CEILING RETURN GRILLE. 18X12 AIR INTAKE METAL DUCTWORK. TRANSITION FROM OUTSIDE LOUVER. INSULATE WITH 1-1/2" FIBERGLASS ALUMINUM FACED SEALED WITH TAPED JOINTS.
13. 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.
14. PROVIDE AND INSTALL FLUSH IN GRADE TRAFFIC RATED QUAZITE BOX FOR FIBER OPTIC CABLE. COORDINATE EXACT LOCATION WITH ENDPOINT OF FIBER OPTIC CABLE.

ITEM	DESCRIPTION
1	PRESSURE DIFFERENTIAL TRANSMITTER ROSEMOUNT 3051
2	2" FLANGED CONNECTION HIGH PRESSURE DIAPHRAGM SEAL
3	2" BALL VALVE
4	STAINLESS STEEL FLEXIBLE TUBING TEFLON LINED
5	1/2" NPT UNION FITTING
6	1/2" NPT BALL VALVE



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Client: The Navajo Nation
Location: Coyote Canyon, NM

SURGE TANK - POWER AND SPECIAL SYSTEMS PLAN
NAVAJO GALLUP WATER SUPPLY PROJECT
BEACON BISTI N9 - REACH 10.1
MCKINLEY COUNTY, NEW MEXICO



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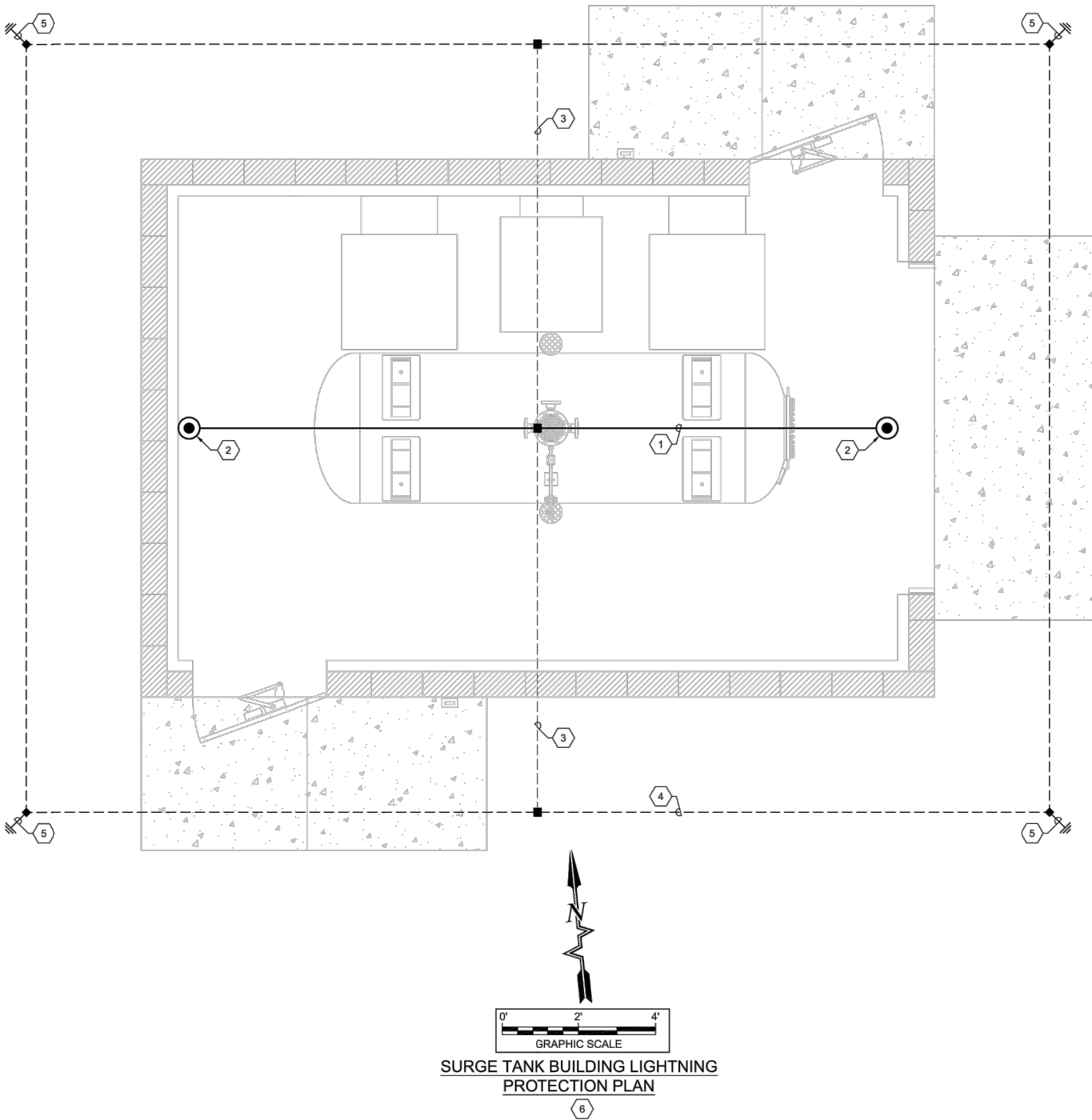


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Project No: 6922268

Sheet: E-21



KEYED NOTES

1. LIGHTNING PROTECTION CLASS 1 ROOF-MOUNTED LATERAL CONDUCTOR AND MOUNTING HARDWARE.
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 4/0 BARE ALUMINUM DOWN-CONDUCTOR. SPLICE ALUMINUM CONDUCTOR TO 2/0 BARE COPPER CONDUCTOR USING ALUMINUM TO COPPER SPLICE KIT. PROVIDE AND INSTALL 1" CONDUIT FOR COPPER CONDUCTOR WHERE CONDUCTOR IS EXPOSED ABOVE GROUND.
4. LIGHTNING PROTECTION COUNTERPOISE SYSTEM. ALL CONNECTIONS SHALL BE EXO-THERMIC WELDS.
5. 3/4" X 10'-0" GROUND ROD.
6. LIGHTNING PROTECTION SYSTEM LAYOUT ON THIS PLAN IS FOR BIDDING PURPOSES ONLY. INSTALLATION TO BE PER NFPA-780, U.S. GOVERNMENT STANDARDS. SYSTEM SHALL BE PROVIDED WITH A MASTER LABEL.

SYMBOL LEGEND - LIGHTNING PROTECTION

- LIGHTNING AIR TERMINAL
- LIGHTNING CABLE CADWELD
- GROUND ROD
- EXPOSED #4/0 BARE ALUMINUM GROUND CABLE
- CONCEALED BELOW GRADE #2/0 BARE COPPER GROUND CABLE COUNTER POISE

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Client: The Navajo Nation
Location: Coyote Canyon, NM
SURGE TANK - LIGHTNING PROTECTION PLAN
NAVAJO GALLUP WATER SUPPLY PROJECT
BEACON BISTI N9 - REACH 10.1
MCKINLEY COUNTY, NEW MEXICO

THOMAS F. FLEWELL
25211
PROFESSIONAL ENGINEER
11/4/21

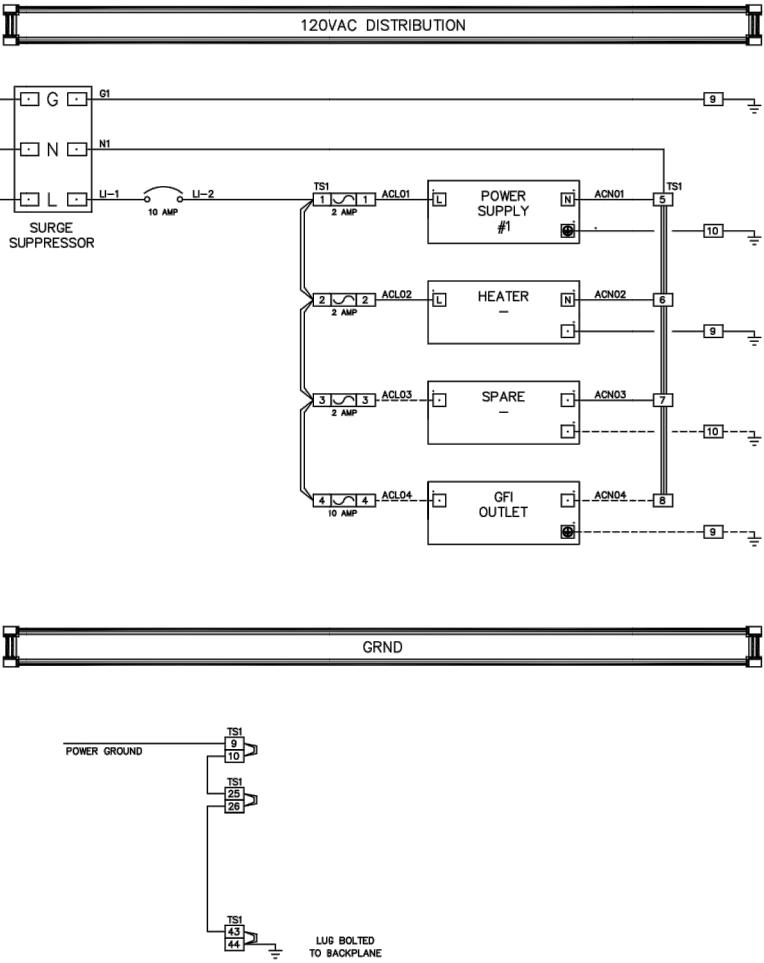
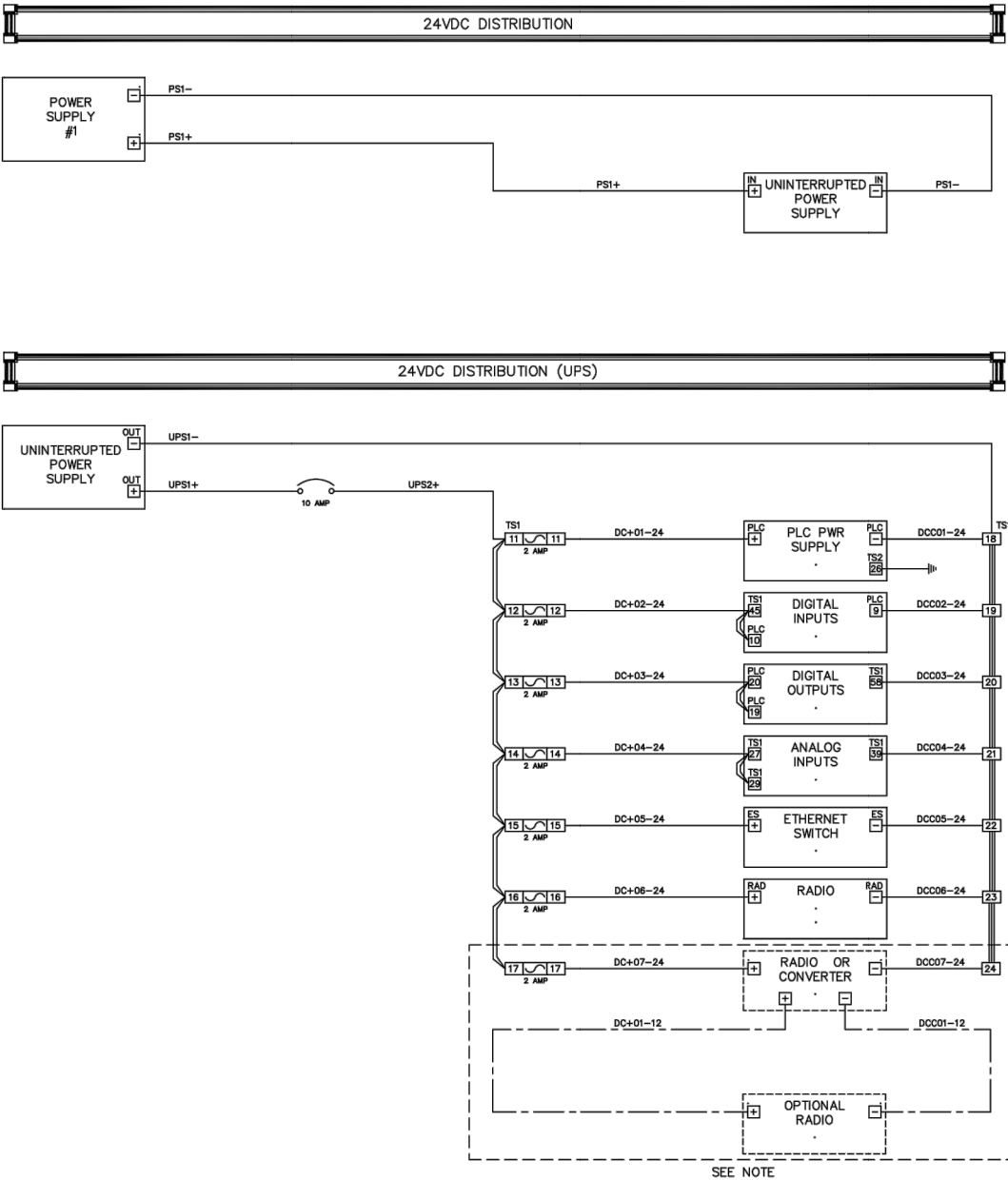
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Date: 11-3-2021
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Project No: 6922268
Sheet: E-22

THE RESPONSE GROUP, INC.
An Electrical Engineering Corporation
11930 Menaul N.E. Suite 214
Albuquerque, New Mexico 87112
Phone: (505) 323-7629 Fax: (505) 323-7394
E-mail: theresponsegroup@trg-inc.net



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	_____		

01	3/19	DWG UPDATES	NTUA
NO.	DATE	DESCRIPTION	BY
NAVAJO TRIBAL UTILITY AUTHORITY			
SCALE:	BY	DATE	
DATE:			
DRAWN:			
APPROVED:			
TITLE	AC TANK CONTROL PANEL	SHEET	4 OF 6
	POWER DISTRIBUTION		



Client: The Navajo Nation

Location: Coyote Canyon, NM

NTUA DIAGRAM

NAVAJO GALLUP WATER SUPPLY PROJECT

BEACON BISTI N9 - REACH 10.1

MCKINLEY COUNTY, NEW MEXICO

21359

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THOMAS F. FRIEDLE

PROFESSIONAL ENGINEER

11/4/21

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Project No: 6922268

Sheet: E-31

Revision

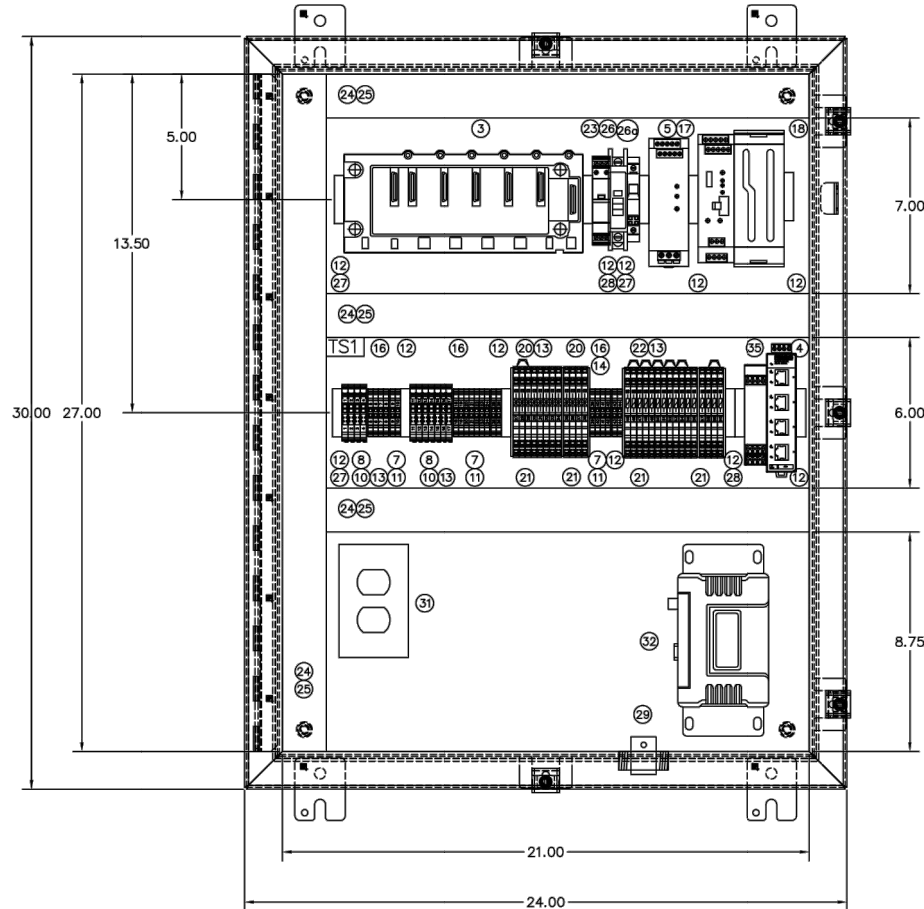
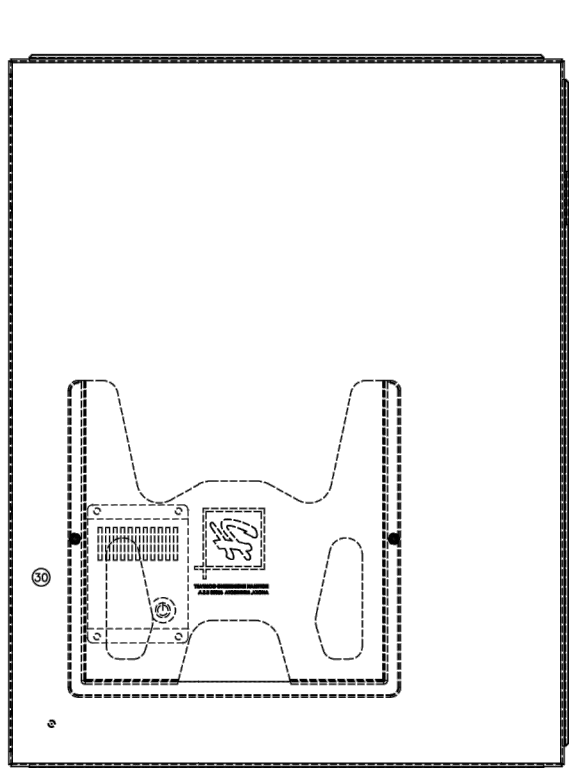
Date

Description

By

Chkd

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BILL OF MATERIALS			
ITEM	QTY	PART NO.	DESCRIPTION
1	1	A30H24DLP	SINGLE-DOOR TYPE 4 ENCLOSURE
2	1	A30P24	BACKPLANE
3*	1	M340	MODICON M340 BOM
3a	1	BMXXBM0400	4-SLOT RACK
3b	1	BMXCP3020	POWER SUPPLY
3c	1	BMXP342020	MODULE
3d	1	BMXDM16025	CPU PROCESSOR
3e	1	BMXMM0600	DIGITAL INPUT/OUTPUT
3f	1	BMXFTB2010	ANALOG INPUT/OUTPUT
3g	1	BMXNOM0200	MODULE
4	1	FL SWITCH	REMOVABLE CONNECTION
5	1	SN 5TX	BLOCK - SCREW CLAMP
6	1	QUINT4-PS/1AC/24DC/5	MODULE
7	14	UT2,5	INDUSTRIAL ETHERNET
8	10	UT4TG	SWITCH
9	7	P-FU5X20LED24	POWER SUPPLY
10	4	P-FU5X20LA250	22.5-28.5V ADJUSTABLE
11	6	UT2,5PE	UT2,5 TERMINALS
12	15	E/NS35N	FUSE TERMINAL BASE
13	3	FBS 20-6 BU #3032208	FUSE PLUG
14	3	FBS 20-5 BU #3036929	FUSE PLUG
15	8	D-UT2,5/10	GROUNDING TERMINAL
16	4	ATP-UT	END CLAMP
17	2	QUINT4-UPS/24DC/24DC/10	FIXED BRIDGE
18	2	UPS-BAT/VRLA/24DC/1.3AH	INSERTION BRIDGE
19	1	PLT-SEC-T3-120-FM #2905228	END COVER
20	12	TTC-6-TVSD-C-24DC-UT-I #2906831	PARTITION PLATES
21	6	TTC-6-LCP #2906729	UNINTERRUPTIBLE POWER SUPPLY
22	16	TTC-6-MOV-C-24DC-UT-I #2906837	ENERGY STORAGE
23	1	PLT-SEC-T3-120-FM #2905228	PHENIX CONTACT
24	AN	FZX4LG6	PHENIX CONTACT
25	AN	C2LG6	PHENIX CONTACT
26	1	TMC 61C 10A #0902072	PHENIX CONTACT
26a	1	UT6-TMCM 10A #0916610	PHENIX CONTACT
27	AN	1492DR6	PHENIX CONTACT
28	AN	1492-DR5	PHENIX CONTACT
29	1	IS-50NX-C2	PHENIX CONTACT
30	1	D-AH1001A	PHENIX CONTACT
31	1	DRUBGF115	PHENIX CONTACT
32	1	ORBIT OR TRANSNET CAT6	PHENIX CONTACT
33	1	ORBIT OR TRANSNET CAT6	PHENIX CONTACT
34*	1	MINI-PS-12-24 DC/5-15/2	PHENIX CONTACT
35*	1	MINI-PS-12-24 DC/5-15/2	PHENIX 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.

01	3/19	DWG UPDATES	NTUA
NO.	DATE	DESCRIPTION	BY
NAVAJO TRIBAL UTILITY AUTHORITY			
SCALE:	NONE	REVISIONS	BY DATE
DATE:			
DRAWN:			
APPROVED:			
TITLE:	AC TANK CONTROL PANEL	SHEET	5 OF 6



Client: The Navajo Nation

Location: Coyote Canyon, NMI

NTUA DIAGRAM

NAVAJO GALLUP WATER SUPPLY PROJECT

BEACON BISTI N9 - REACH 10.1

MCKINLEY COUNTY, NEW MEXICO

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Project No: 6922268

Sheet: E-32

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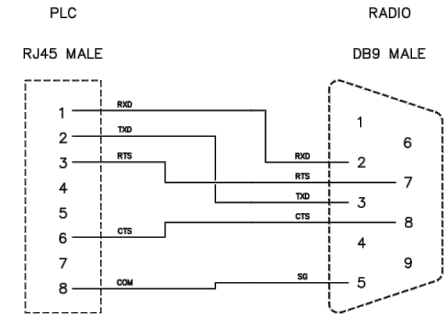
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A

CABLE DIAGRAM: PLC TO RADIO

NO.	DATE	DESCRIPTION	BY
01	3/19	DWG UPDATES	NTUA
NAVAJO TRIBAL UTILITY AUTHORITY			
SCALE:	NONE	REVISIONS	BY DATE
DATE:	-	-	-
DRAWN:	-	-	-
APPROVED:	-	-	-
TITLE	AC TANK CONTROL PANEL		NO. 6
CABLE PINOUT			SHEET 6 OF 6



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Client: The Navajo Nation
Location: Coyote Canyon, NM

NTUA DIAGRAM
NAVAJO GALLUP WATER SUPPLY PROJECT
BEACON BISTI N9 - REACH 10.1
MCKINLEY COUNTY, NEW MEXICO

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Sheet: E-33

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PANEL SCHEDULE - NEW PANEL "ST"										
LOCATION: Surge Tank Building			VOLTAGE: 120/240V-1P-3W		AMPACITY: 100A		Main: 100A/2P MCB			
FED FROM: 100 Amp Fusible Disconnect			ENCLOSURE: NEMA 3R		MOUNTING: SURFACE		AIC: 10,000			
BKR SIZE	DESCRIPTION	DEMAND CODE	LOAD (VA)	# OF CIR	LOAD (VA)		LOAD (VA)	DEMAND CODE	DESCRIPTION	BKR SIZE
					PHASE A	PHASE B				
20A-1P	LIGHTING	LITG	186	1	386		2	200	PLC/RTU CABINET	20A-1P
20A-1P	RECEPTACLES	REC	720	3		920	4	200	SOLENOID PANEL	20A-1P
20A-1P	RECEPTACLES	REC	540	5	1370		6	830	EXHAUST FAN	20A-1P
30A-2P	UNIT HEATER	LMECH	2066	7		2166	8	100	SMOKE DETECTORS	20A-1P
30A-2P	UNIT HEATER	LMECH	2066	9	2066		10		SPARE	20A-1P
30A-2P	UNIT HEATER	LMECH	2066	11		2066	12		SPARE	20A-1P
30A-2P	UNIT HEATER	LMECH	2066	13	2066		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
1P	SPACE ONLY			25			26		SPACE ONLY	1P
1P	SPACE ONLY			27			28		SPACE ONLY	1P
1P	SPACE ONLY			29			30		SPACE ONLY	1P

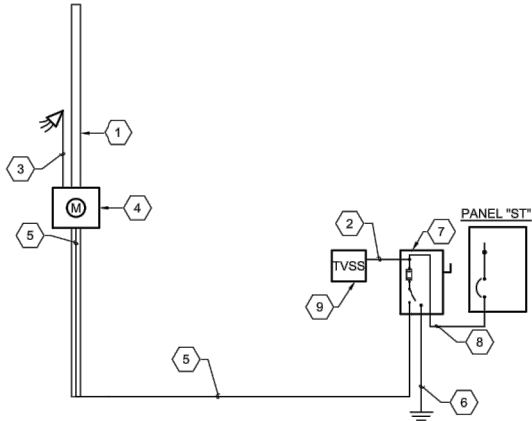
Total Phase Loads (VA): 5,888 5,152 Notes: 1. New Panelboard
Total Phase Loads (Amps): 49.1 42.9 2. 30-Circuit, Lockable Enclosure
Total Connected Loads (kVA): 11.0 3. Copper Neutral and Ground Bus Bars
4. Door-In-Door Enclosure.

LOAD CALCULATIONS - NEW PANEL "ST"														
Connected (kVA) by Type:			Estimated Demand (kVA) by Type:											
LITG	Lighting:	0.2	Lighting at 125% (kVA)	0.2	Total Estimated Demand (kVA)	12.1								
REC	Receptacles:	1.3	Receptacles:	1.3	Amps at 120/240V-1 Phase (Amps)	50.5								
			10kVA at 100% (kVA)	1.3	Panel Ampacity (Rating)	100								
			Rest at 50% (kVA)	0.0										
EQP	Equipment:	0.5	Eqp at 100% (kVA)	0.5	Spare Capacity	49.5%								
LMECH	Largest Mech:	4.1	Largest at 125% (kVA)	5.2										
MECH	Mechanical:	5.0	Rest at 100% (kVA)	5.0										

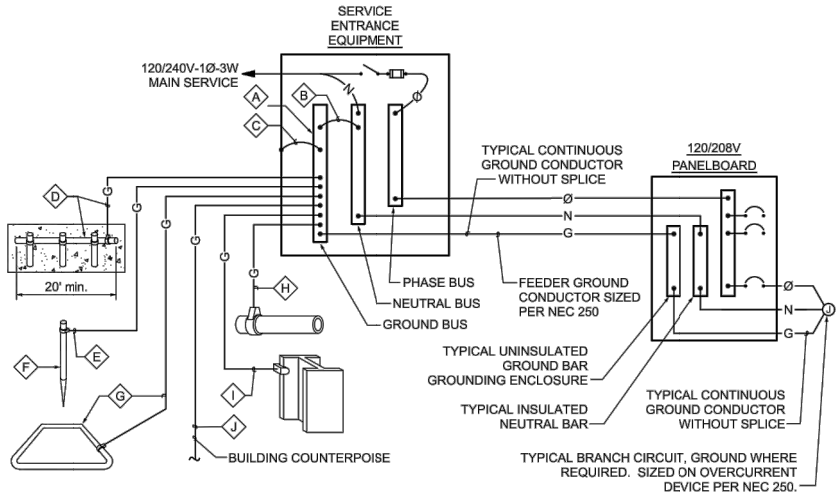
Control Wiring Schedule - Surge Tank Building			
TAG #	FED FROM	TO	WIRE REQUIREMENTS
B1	Door Switch	PLC Panel	2 # 14, 1 # 14 Gnd - 1/2" Conduit
B2	Door Switch	Door Switch	2 # 14, 1 # 14 Gnd - 1/2" Conduit
B3	Smoke Detector	PLC Panel	2 # 14, 1 # 14 Gnd - 1/2" Conduit
B4	Smoke Detector	Smoke Detector	2 # 14, 1 # 14 Gnd - 1/2" Conduit
B5	Solenoid Valve	Solenoid Panel	3 # 14, 1 # 14 Gnd - 1/2" Conduit
B6	Solenoid Valve	Solenoid Panel	3 # 14, 1 # 14 Gnd - 1/2" Conduit
B7	Solenoid Panel	Solenoid Panel	3 # 14, 1 # 14 GND - 1/2" Conduit
B8	Fiber Optic Transmitter Unit	Quazite Box	2" Conduit
B9	250 OHM resistor	Pressure Transmitter	2/C #18 Twisted Pair Shielded Cable - 1/2" Conduit
B10	250 OHM resistor	PLC	2/C #18 Twisted Pair Shielded Cable - 3/4" Conduit
B11	Low Temperature Sensor	PLC	2 # 14, 1 # 14 Gnd - 1/2" Conduit
B12	Door Switch	Door Switch	2 # 14, 1 # 14 Gnd - 1/2" Conduit

DISCRETE & ANALOG I/O LIST

Site Name	I/O Name	Tag	Point	Type	Local	SCADA	Notes
Surge Tank Building							Remote I/O talks to Booster station PLC. Relays info to and from
	Surge Bldg. Intrusion Man Door		I1	DI	Yes	Yes	
	Surge Bldg. Intrusion Roll Up Door		I2	DI	Yes	Yes	
	Surge Bldg. Smoke Detector		I3	DI	Yes	Yes	
	Low Pressure Alarm		I4	DI	Yes	Yes	
	Low Temperature Sensor		I5	DI	Yes	Yes	
	Pulse Modular Low Battery		I8	DI	Yes	Yes	
	Surge Bldg Intrusion North Door		I11	DI	Yes	Yes	
	Surge Tank Level		AI1	AI	Yes	Yes	
	Pressure Transmitter		AI3	AI	Yes	Yes	



POWER RISER DIAGRAM



GROUNDING SYSTEM DIAGRAM - 120/240 VOLT SYSTEM

NOT TO SCALE

GROUNDING SYSTEM GENERAL NOTES

- THE GROUNDING ELECTRODE SYSTEM SHALL CONSIST OF ITEMS A, B, C, D, E, F, AND G, WHERE APPLICABLE.
- ITEMS H, I, AND J MUST BE BONDED TOGETHER AND TO THE GROUNDING ELECTRODE SYSTEM WHEN THEY ARE PRESENT.
- 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.
- THIS DETAIL IS PROVIDED IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE, ARTICLE 250, PERTAINING TO THE "GROUNDING ELECTRODE SYSTEM".
- ALL SPLICING SHALL BE ACCOMPLISHED VIA EXOTHERMIC WELD (CAD-WELD) ONLY.
- ALL CONDUCTOR SIZING INDICATED ON THE GROUNDING SCHEDULE ARE FOR COPPER CONDUCTORS. ALUMINUM IS NOT PERMITTED.
- ANY VARIANCES FROM THIS DIAGRAM AND ASSOCIATED SCHEDULE AND NOTES MUST BE REQUESTED AND APPROVED IN WRITING PRIOR TO INSTALLATION.
- ALL INSTALLATIONS SHALL COMPLY WITH THE LATEST ADOPTED EDITION OF N.E.C. ARTICLE 250 (ALL SUBPARAGRAPHS) AND ALL STATE AND LOCAL REQUIREMENTS.
- 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									
	A	B	C	D	E	F	G	H	I
	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
CODE REFERENCE									
AMPACITY									
100 AMP		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
225 AMP		#4	#4	#4	#6	5/8"x8"	#2	#4	#2/0
		#2	#2	#4	#6	5/8"x8"	#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

KEYED NOTES

- PROVIDE AND INSTALL A 25'-0" SOUTHERN PINE CLASS 4 WOOD POLE FOR THE INSTALLATION OF RISER, METER AND DISCONNECT.
- 4#8 THWN Cu IN 1" CONDUIT BETWEEN TVSS AND PANEL.
- PROVIDE A 2" RGS CONDUIT ON POLE RISER WITH CONDUCTORS. COORDINATE INSTALLATION WITH UTILITY COMPANY PRIOR TO PROCEEDING WITH INSTALLATION OF CONDUITS
- PROVIDE AND INSTALL A 100 AMP 120/240 VOLT METER SOCKET PER THE LOCAL UTILITY COMPANY REQUIREMENT FACING FENCE.
- 3 #2 CONDUCTORS IN 2" CONDUIT
- REFER TO "GROUNDING SYSTEM DIAGRAM - 120/240 VOLT SYSTEM" ON THIS SHEET FOR ADDITIONAL INFORMATION.
- PROVIDE AND INSTALL A FUSIBLE DISCONNECT SWITCH, 100 AMPS, 250 VOLTS, 2 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.
- 3#2 THWN Cu AND 1#8 THWN Cu GROUND IN 1 1/4" CONDUIT.
- 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.



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Client: The Navajo Nation

Location: Coyote Canyon, NM

POWER RISER DIAGRAM AND DETAILS
NAVAJO GALLUP WATER SUPPLY PROJECT
BEACON BISTI N9 - REACH 10.1
MCKINLEY COUNTY, NEW MEXICO

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