

# NAVAJO GALLUP WATER SUPPLY PROJECT

## REACH 24.1 JAN

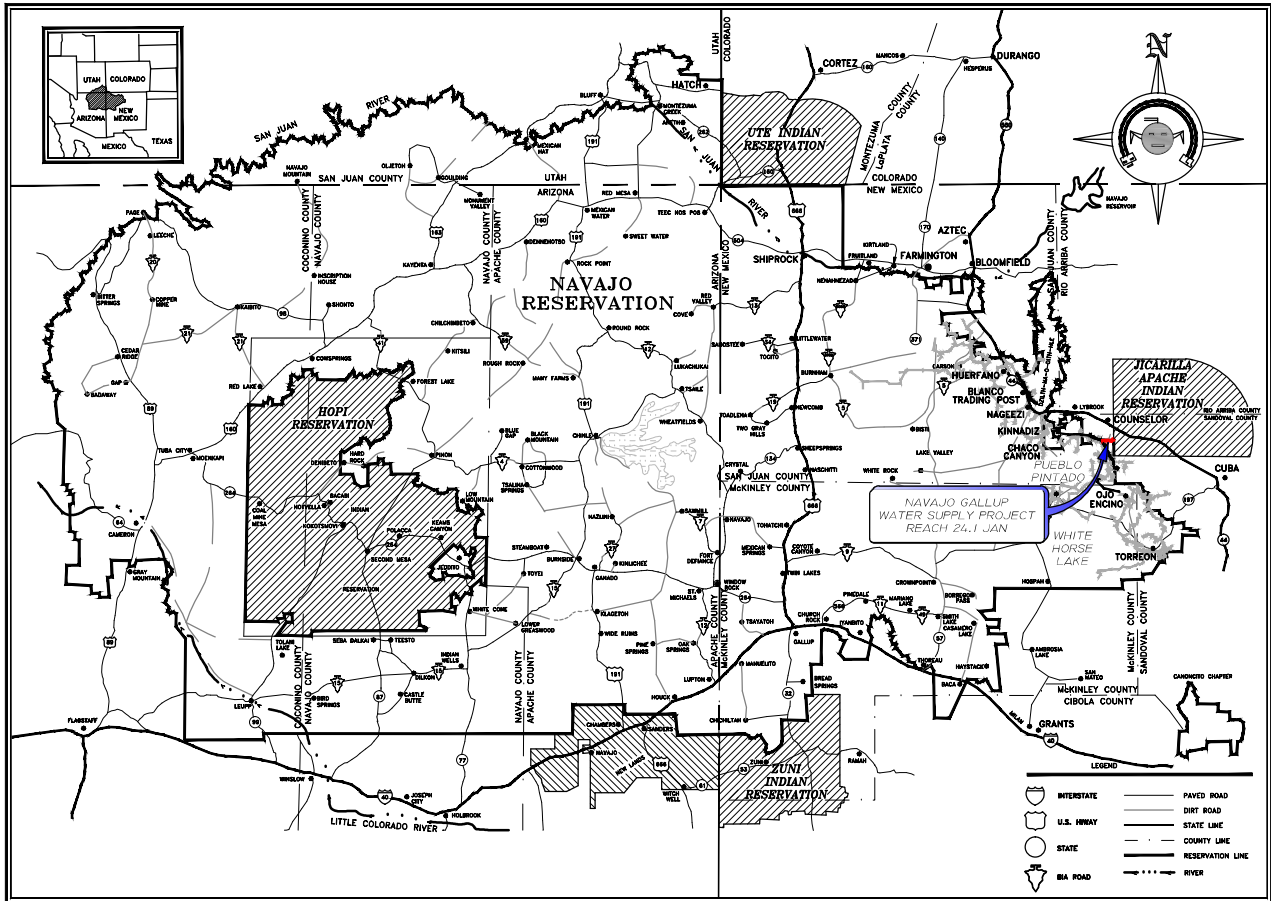


## REACH 24.1 TURNOUT TO JICARILLA APACHE INDIAN RESERVATION BORDER, NM

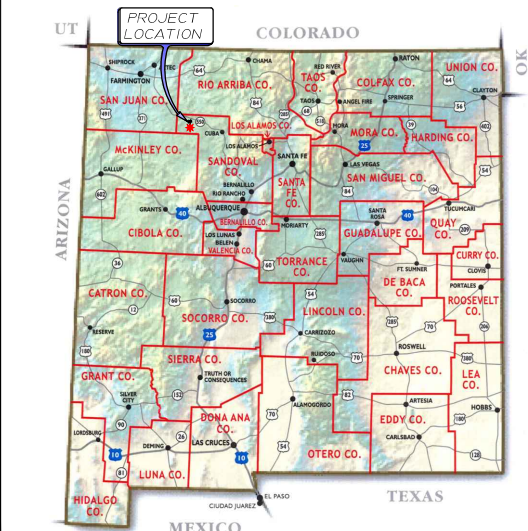
### OCTOBER 2016

#### PROJECT DESCRIPTION

THE PROJECT CONSISTS OF CONSTRUCTION OF  
3.0 MILES OF 10" PVC WATERLINE WITH A SURGE TANK  
AND A FLOW CONTROL / METER VAULT



NAVAJO RESERVATION  
PROJECT SITE MAP



PROJECT VICINITY MAP

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E301JAN	ELECTRICAL DETAILS
E302JAN	ELECTRICAL DETAILS
E303JAN	ELECTRICAL DETAILS

Revision	Date	Description	By	CHKD

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Client: The Navajo Nation Location: Reach 24.1 JAN Turnout to JAN Border, NM  
**COVER SHEET AND DRAWING LIST**  
**NAVAJO GALLUP WATER SUPPLY PROJECT - REACH 24.1 JAN**  
**SANDOVAL COUNTY, NEW MEXICO**

Designed AGR	Drawn WHA/AV	Checked AGR
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AND NOT TO BE USED FOR  
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STAMPED, SIGNED AND DATED

**NOTICE OF EXTENDED  
PAYMENT PROVISION:**  
THIS CONTRACT ALLOWS THE  
OWNER TO MAKE PAYMENT  
WITHIN 45 DAYS AFTER  
SUBMISSION OF  
AN UNDISPUTED REQUEST  
FOR PAYMENT.



Date: October 24, 2016
Scale: Horiz: NONE Vert: N/A
Project No: 6921307
Sheet: G-1

GENERAL NOTES

1.

THE ENGINEER WAIVES ANY AND ALL RESPONSIBILITY AND IS NOT LIABLE FOR PROBLEMS THAT MAY ARISE FROM CONTRACTOR'S FAILURE TO FOLLOW THESE DRAWINGS, SPECIFICATIONS, AND THE DESIGN INTENT THEY CONVEY, OR FOR PROBLEMS ARISING FROM FAILURE TO OBTAIN AND/OR FOLLOW THE ENGINEER'S GUIDANCE WITH RESPECT TO ANY ERRORS, OMISSIONS, INCONSISTENCIES, AMBIGUITIES, OR CONFLICTS.
2.

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.
3.

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

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.
5.

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.
6.

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.
7.

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.
8.

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.
9.

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.
10.

ALL AREAS DISTURBED BY THE CONSTRUCTION ACTIVITIES OF THIS PROJECT SHALL BE RESTORED AND RE-GRADED IN A MANNER ACCEPTABLE TO THE OWNER, ENGINEER, AND LAND OWNER. ALL DISTURBED AREAS SHALL BE RE-SEEDED PER THE CONTRACT DOCUMENTS.
11.

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.
12.

ALL PRESSURE RATINGS GIVEN HEREIN FOR PIPES, VALVES, FITTINGS AND OTHER COMPONENTS REFER TO COLD WATER WORKING PRESSURE RATING, UNLESS OTHERWISE NOTED.
13.

VERTICAL CLEARANCES AT WATERLINE CROSSINGS ON PLAN AND PROFILE SHEETS CALLED OUT AS "MIN CLR TO CL" REFER TO MINIMUM CLEARANCE FROM BOTTOM OF EXISTING WATERLINE TO VERTICAL CENTERLINE 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.
14.

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

CONTACT INFORMATION:

NAVAJO NATION WATER MANAGEMENT BRANCH (OWNER):

JASON JOHN (928) 729-4004

SOUDER, MILLER & ASSOCIATES (ENGINEER):

ANDREW ROBERTSON, P.E (OFFICE) (505) 299-0942 (CELL) (505) 264-1488

NAVAJO TRIBAL UTILITY AUTHORITY (NTUA):

CROWNPOINT SUB-OFFICE (800) 528-5011 (ext. 4758)

ABBREVIATIONS

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

LEGEND

	EXISTING BUTTERFLY VALVE
	GATE VALVE
	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
	ROAD EDGE
	ROAD CENTER
	CONTOUR MAJOR
	CONTOUR MINOR
	SECTION CORNER
	CULTURALLY / BIOLOGICALLY SENSITIVE AREA DO NOT ENCROACH
12	SECTION NUMBER
	CURRENT LAND STATUS (OWNER)
	SECTION LINE
	QUARTER 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		RIP RAP OR CABLE CRETE
	BUTTERFLY VALVE		GRAVEL OVER BASE COURSE
	VACUUM BREAKER		SWALE
	AIR RELEASE VALVE COMBO		DIRECTION OF FLOW
	FLUSH VALVE		MATCH LINE
	POWER POLE		
	GUY ANCHOR		
	STORM DRAIN INLET / OUTLET		
	DOUBLE SWING GATE		

Client: The Navajo Nation Location: Reach 24.1 JAN Turnout to JAN Border, NM

GENERAL NOTES AND LEGEND

NAVAJO GALLUP WATER SUPPLY PROJECT - REACH 24.1 JAN SANDOVAL COUNTY, NEW MEXICO

Designed  
AGR

Drawn  
WtH/AV

Checked  
AGR

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NOTICE OF EXTENDED PAYMENT PROVISION: THIS CONTRACT ALLOWS THE OWNER TO MAKE PAYMENT WITHIN 45 DAYS AFTER SUBMISSION OF AN UNDISPUTED REQUEST FOR PAYMENT.

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Date: October 24, 2016

Scale: Horiz: Vert:

Project No: 6921307

Sheet: G-2

Revision

Date

Description

By

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Engineering & Surveying

SOUDER, MILLER & ASSOCIATES

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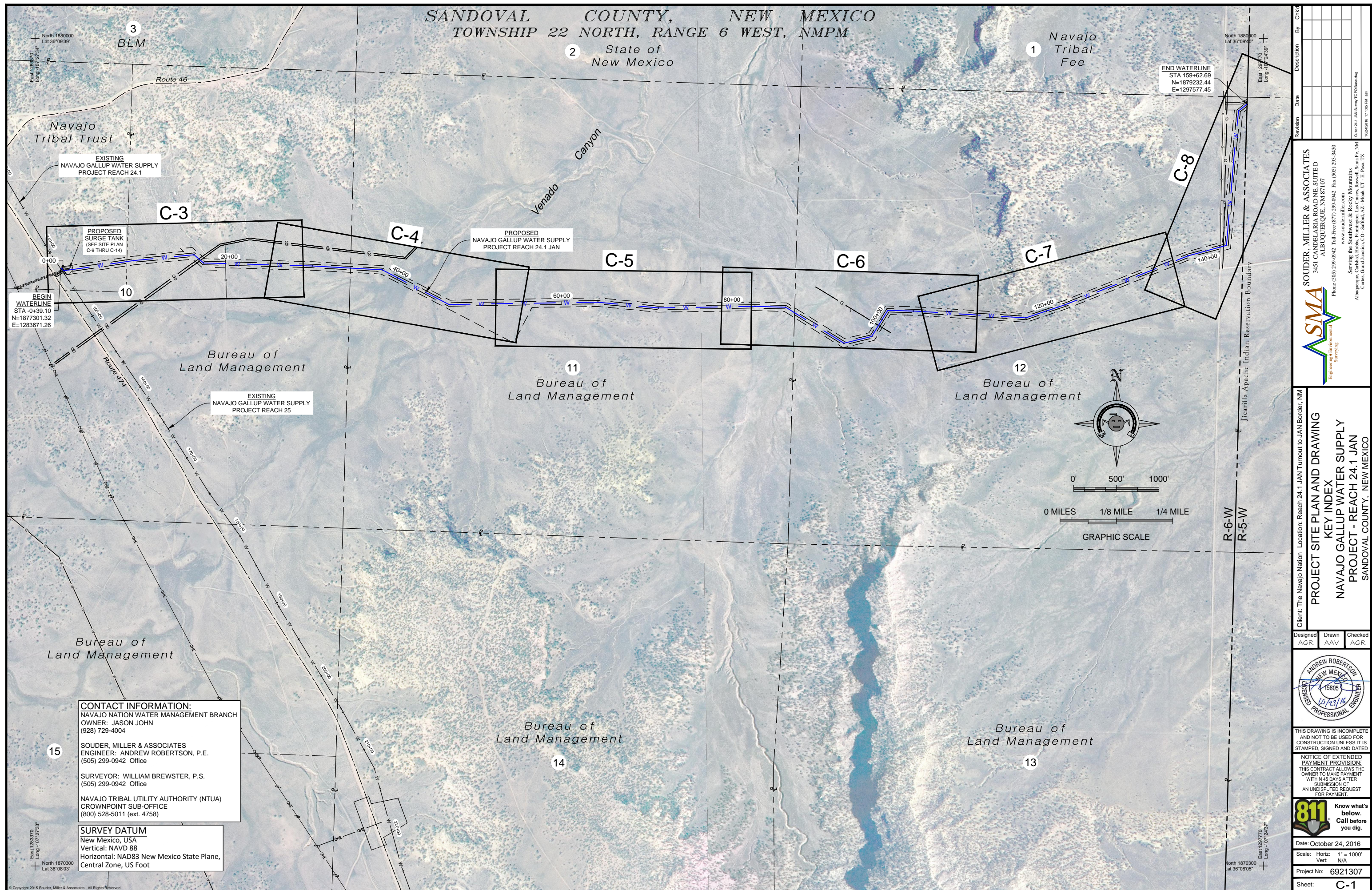
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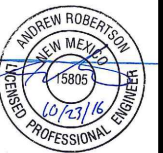
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PROJECT SITE PLAN AND DRAWING  
KEY INDEX  
NAVAJO GALLUP WATER SUPPLY  
PROJECT - REACH 24,1 JAN  
SANDOVAL COUNTY, NEW MEXICO

Designed AGR	Drawn AAV	Checked AGR
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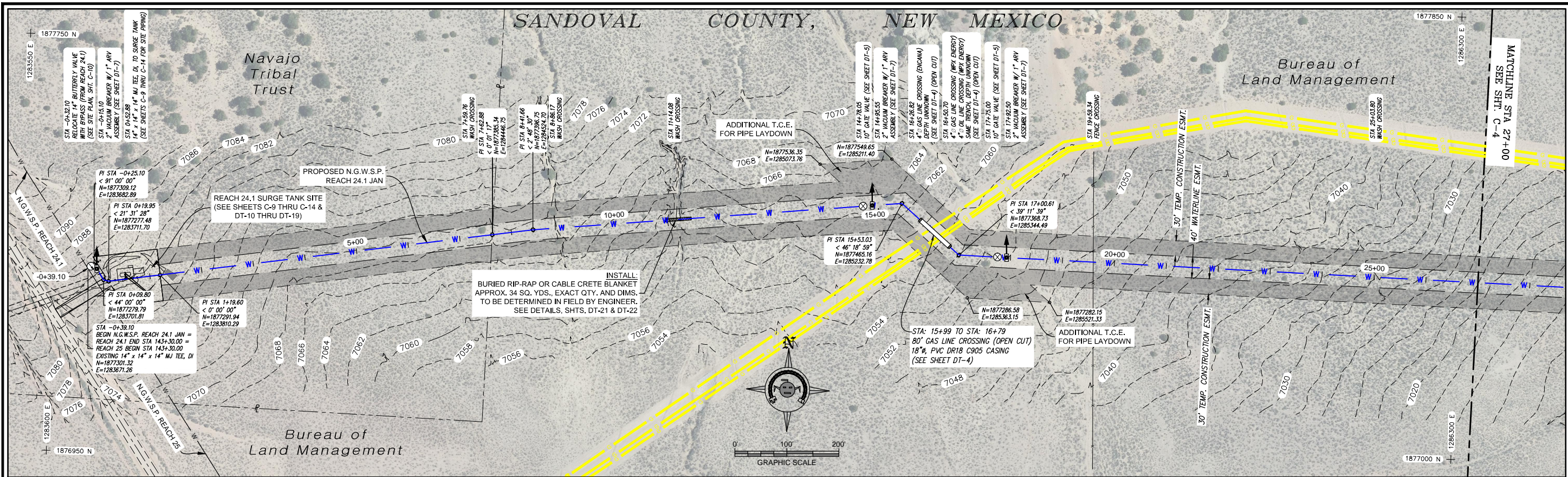


Date: October 24, 2016  
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 Vert: N/A  
 Project No: 6921307  
 Sheet: C-1

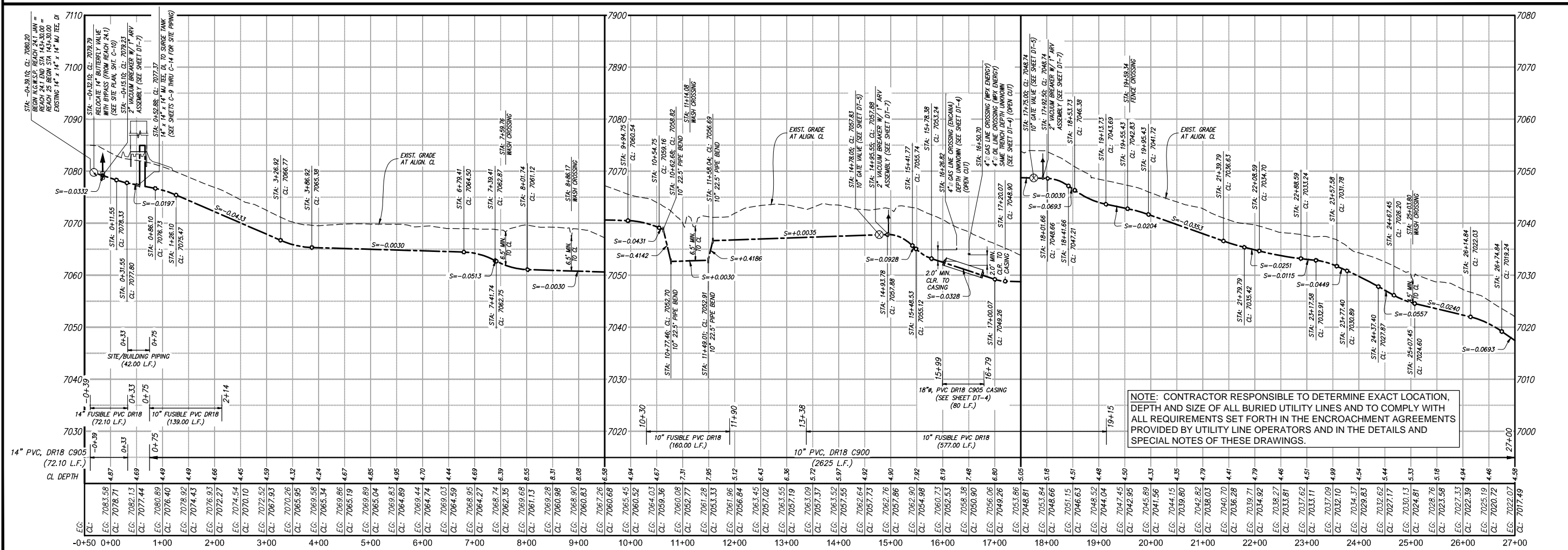








PLAN VIEW  
14" AND 10" WATERLINE



PROFILE VIEW  
14" AND 10" WATERLINE

Client: The Navajo Nation Location: Reach 24.1 JAN Turnout to JAN Border, NM

DESIGNED: AGR DRAWN: WJA/AV CHECKED: AGR

ANDREW ROBERTSON  
NEW MEXICO  
15805  
10/23/15  
REGISTERED PROFESSIONAL ENGINEER

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Know what's below.  
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DATE: OCTOBER 24, 2016  
SCALE: HORIZ: 1" = 200'  
VERT: 1" = 20'  
PROJECT NO: 6921307  
SHEET: C-3

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Engineering & Surveying

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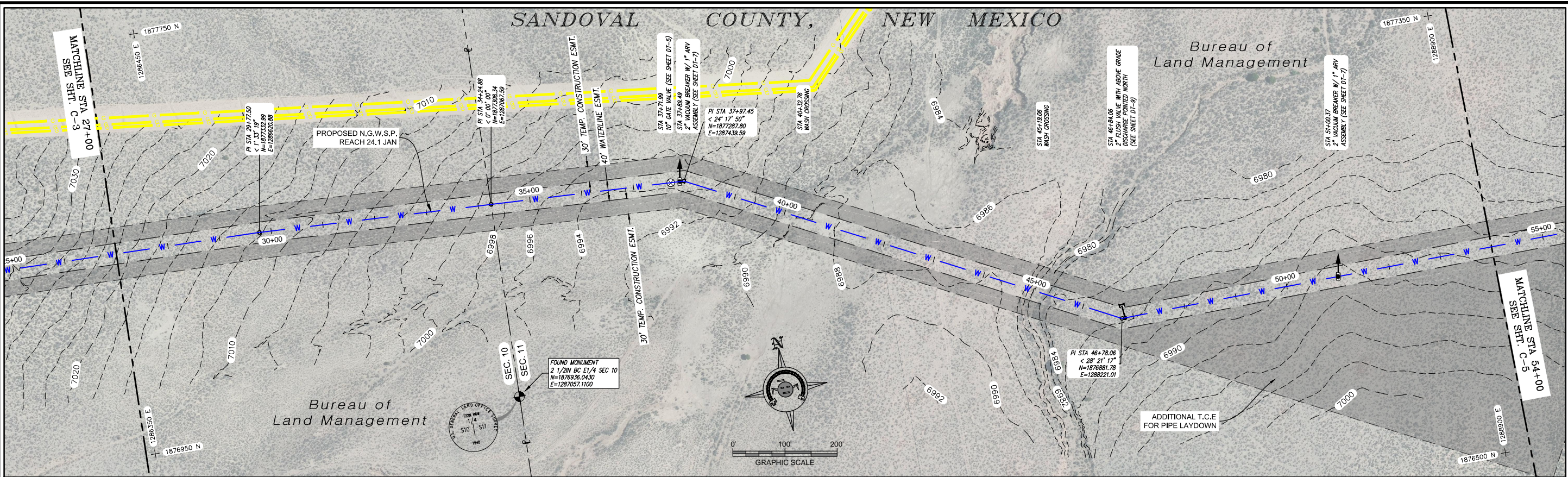
Date

Description

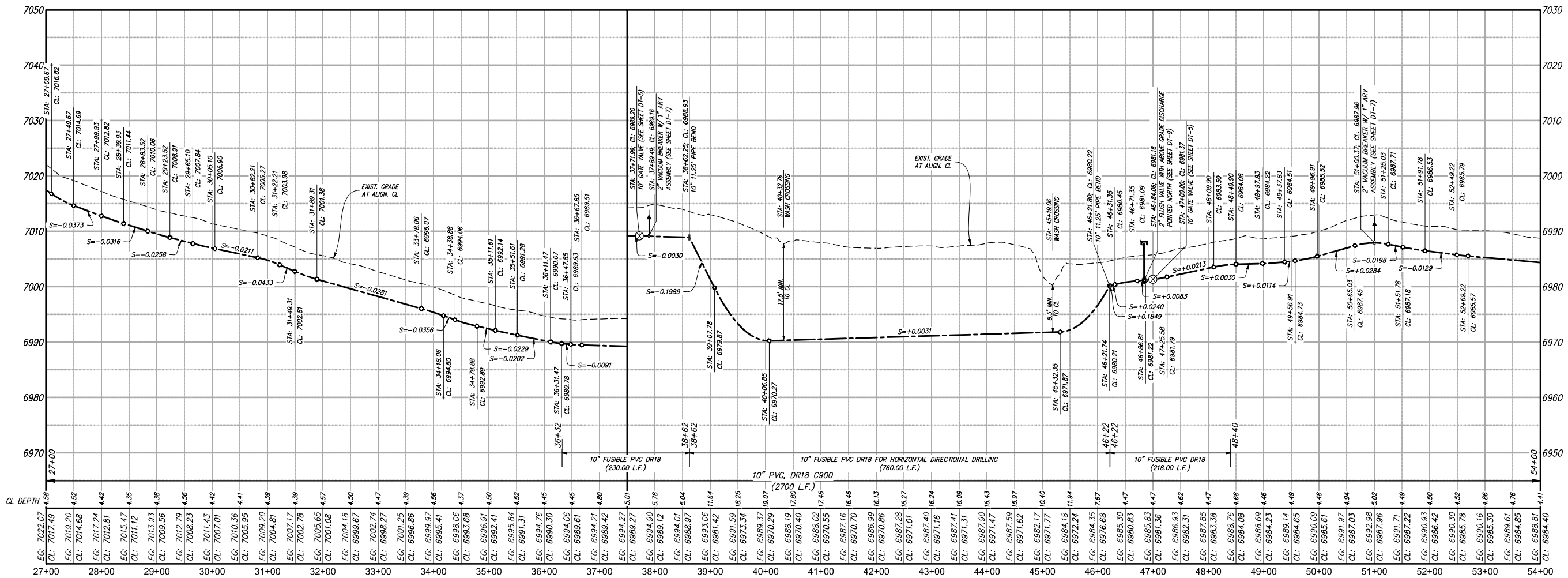
By

Chk'd





PLAN VIEW  
10" WATERLINE



PROFILE VIEW  
10" WATERLINE

Client: The Navajo Nation

Location: Reach 24.1 JAN Turnout to JAN Border, NM

Project No: 6921307

Sheet: C-4

Designed: AGR

Drawn: WJA/AV

Checked: AGR

ANDREW ROBERTSON

15805

10/23/16

REGISTERED PROFESSIONAL ENGINEER

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Revision

Date

Description

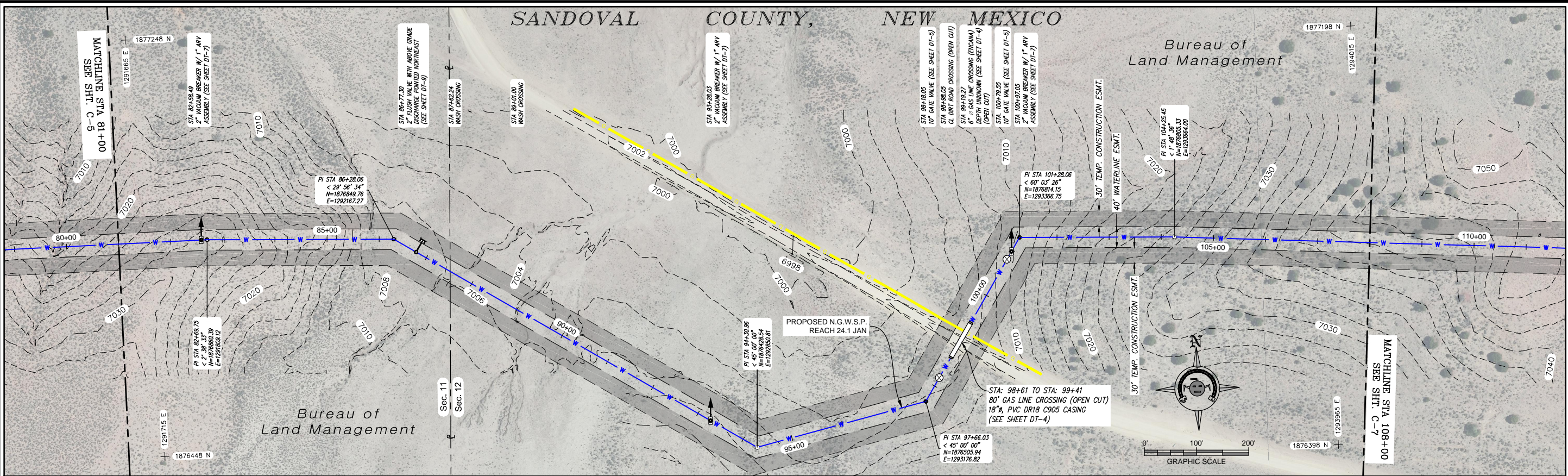
By

CHKD

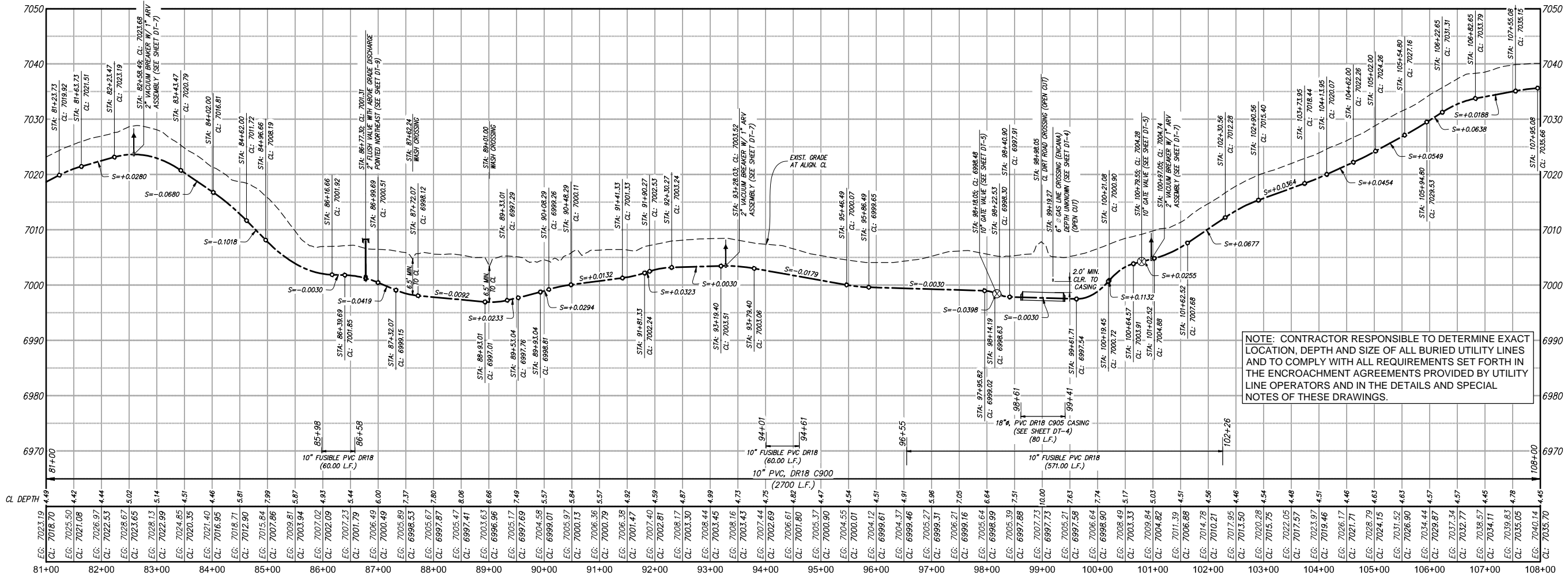








PLAN VIEW  
10" WATERLINE



PROFILE VIEW  
10" WATERLINE

Client: The Navajo Nation Location: Reach 24.1 JAN Turnout to JAN Border, NM

Designed: AGR Drawn: MHA/AV Checked: AGR

ANDREW ROBERTSON  
15805  
10/23/16  
REGISTERED PROFESSIONAL ENGINEER

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NOTICE OF EXTENDED PAYMENT PROVISION: THIS CONTRACT ALLOWS THE OWNER TO MAKE PAYMENT WITHIN 45 DAYS AFTER SUBMISSION OF AN UNDISPUTED REQUEST FOR PAYMENT.

811 Know what's below. Call before you dig.

Date: October 24, 2016  
Scale: Horiz: 1" = 200'  
Vert: 1" = 20'

Project No: 6921307  
Sheet: C-6

SMA

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Phone (505) 299-0942 Toll-Free (877) 299-0942 Fax (505) 295-3430  
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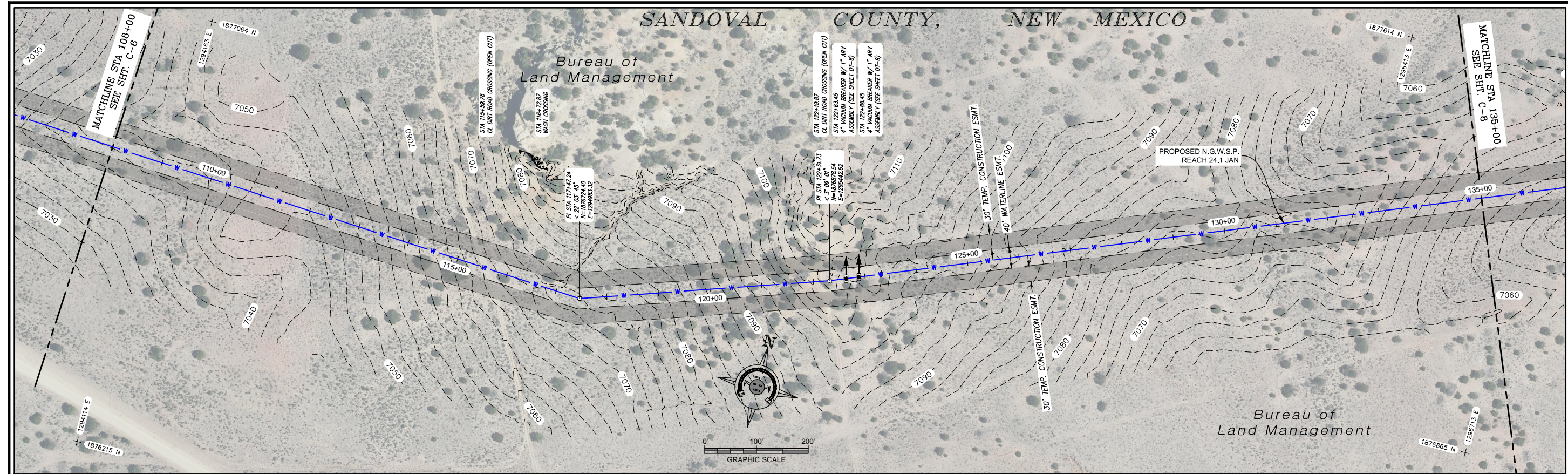
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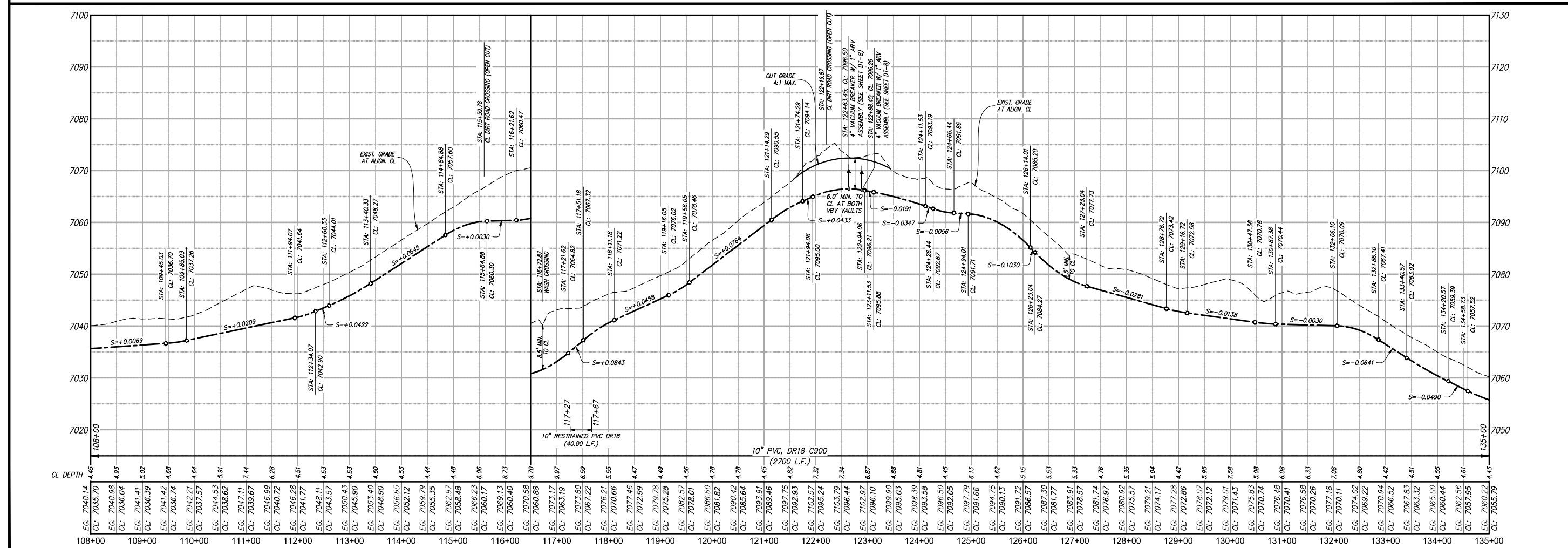
Revision Date Description By Chkd

PG: Reach 24.1 JAN App: (1) - (2) day  
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PLAN VIEW  
10" WATERLINE



PROFILE VIEW  
10" WATERLINE

Revision

Date

Description

By

Chk'd


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Engineers & Surveyors

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10/23/16 1:14:39 PM

Client: The Navajo Nation Location: Reach 24.1 JAN Turnout to JAN Border, NM

PLAN & PROFILE STA 108+00 To STA 135+00  
SECTION 12, T. 22 N., R. 6 W.  
NAVAJO GALLUP WATER SUPPLY  
PROJECT - REACH 24.1 JAN  
SANDOVAL COUNTY, NEW MEXICO

Designed

Drawn

Checked

AGR

WHA/AV

AGR

ANDREW ROBERTSON

15805

10/23/16

REGISTERED PROFESSIONAL ENGINEER

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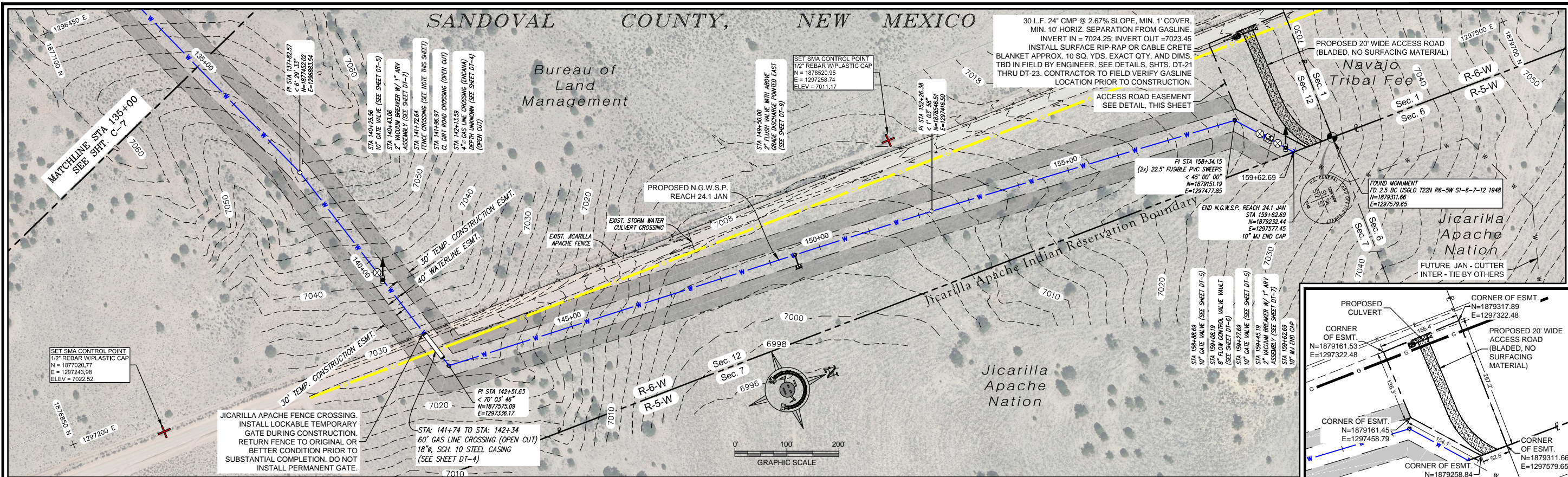
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Vert: 1" = 20'

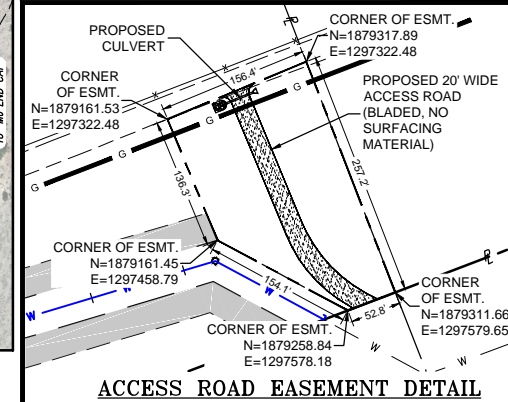
Project No: 6921307

Sheet: C-7

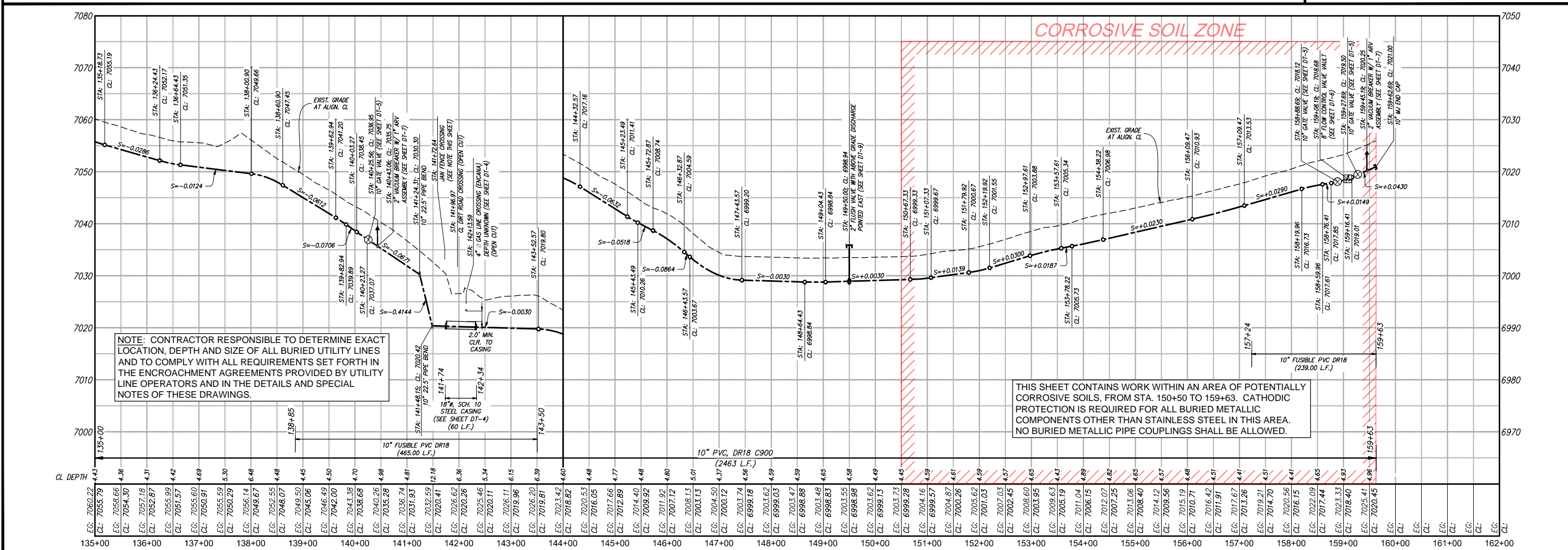




PLAN VIEW  
10" WATERLINE



ACCESS ROAD EASEMENT DETAIL



PROFILE VIEW  
10" WATERLINE

Client: The Navajo Nation Location: Reach 24.1 JAN Turnout to JAN Border, NM

DESIGNED: AGR DRAWN: WIA/AV CHECKED: AGR

ANDREW ROBERTSON  
LICENSED PROFESSIONAL ENGINEER  
15805  
10/23/16

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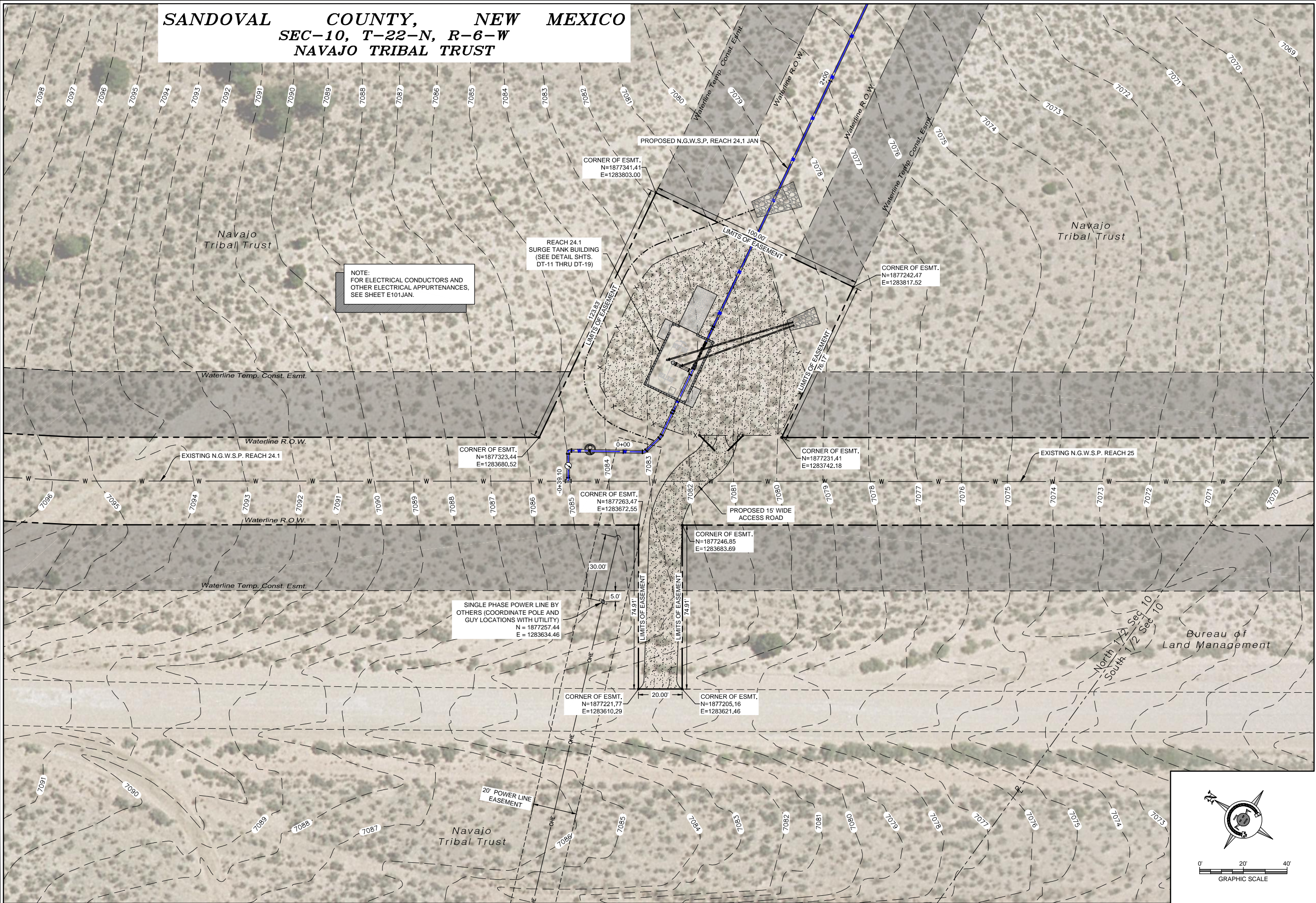
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Date: October 24, 2016  
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Vert: 1" = 20'

Project No: 6921307  
Sheet: C-8



SANDOVAL COUNTY, NEW MEXICO  
SEC-10, T-22-N, R-6-W  
NAVAJO TRIBAL TRUST



NOTE:  
FOR ELECTRICAL CONDUCTORS AND  
OTHER ELECTRICAL APPURTENANCES,  
SEE SHEET E101JAN.

REACH 24.1  
SURGE TANK BUILDING  
(SEE DETAIL SHTS.  
DT-11 THRU DT-19)

CORNER OF ESMT.  
N=1877341.41  
E=1283803.00

CORNER OF ESMT.  
N=1877242.47  
E=1283817.52

CORNER OF ESMT.  
N=1877323.44  
E=1283680.52

CORNER OF ESMT.  
N=1877231.41  
E=1283742.18

CORNER OF ESMT.  
N=1877263.47  
E=1283672.55

CORNER OF ESMT.  
N=1877246.85  
E=1283683.69

SINGLE PHASE POWER LINE BY  
OTHERS (COORDINATE POLE AND  
GUY LOCATIONS WITH UTILITY)  
N = 1877257.44  
E = 1283634.46

CORNER OF ESMT.  
N=1877221.77  
E=1283610.29

CORNER OF ESMT.  
N=1877205.16  
E=1283621.46

Client: The Navajo Nation Location: Reach 24.1 JAN Turnout to JAN Border, NM

REACH 24.1 SURGE TANK  
OVERALL SITE PLAN  
NAVAJO GALLUP WATER SUPPLY  
PROJECT - REACH 24.1 JAN  
SANDOVAL COUNTY, NEW MEXICO

Designed: AGR Drawn: MVH Checked: AGR

ANDREW ROBERTSON  
NEW MEXICO  
15805  
10/23/16  
REGISTERED PROFESSIONAL ENGINEER

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Date: October 24, 2016  
Scale: Horiz: 1" = 40'  
Vert: N/A  
Project No: 6921307  
Sheet: C-9

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Engineers & Surveyors  
Surveying

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Revision	Date	Description	By	Chk'd

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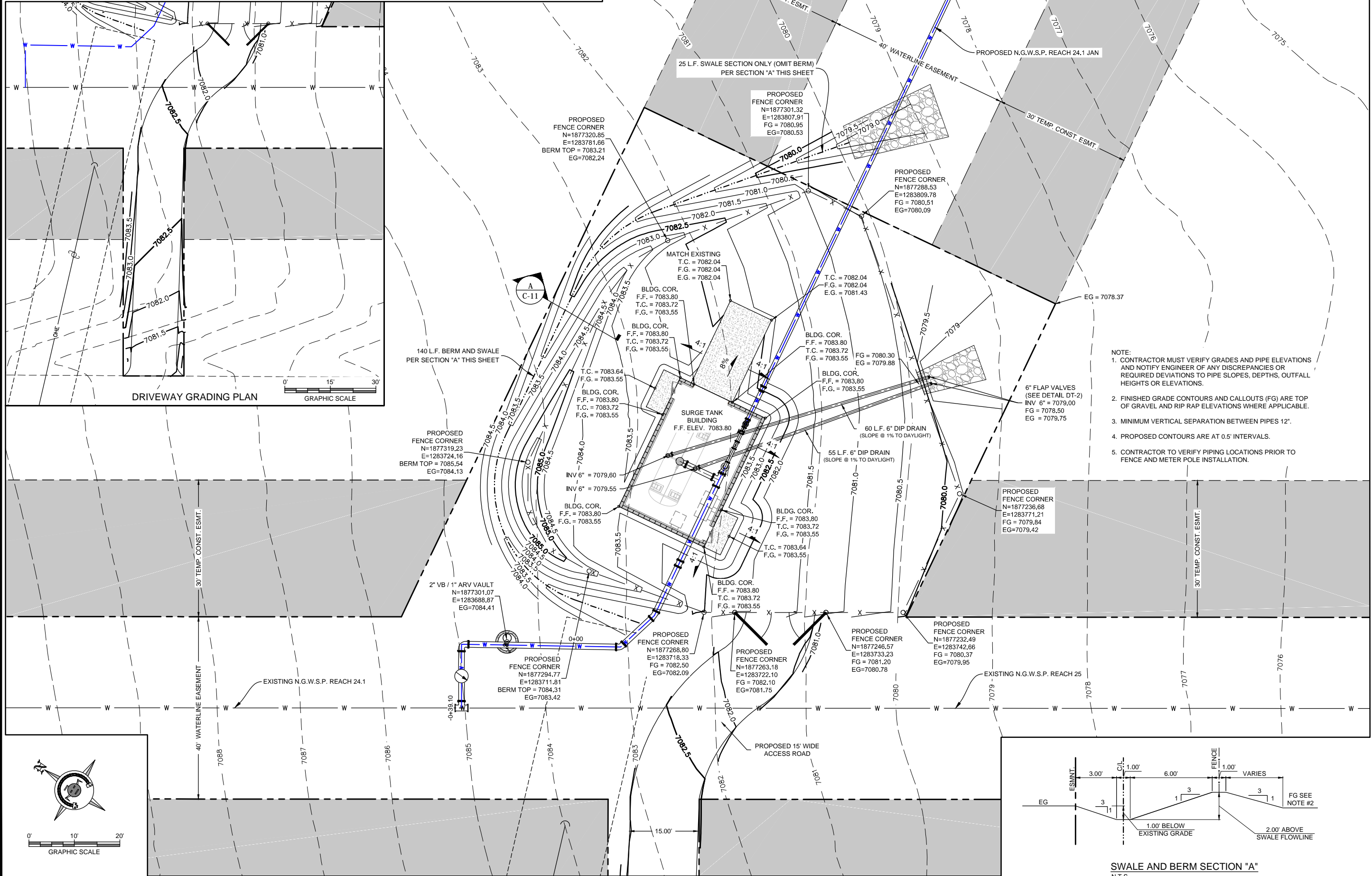
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GRAPHIC SCALE

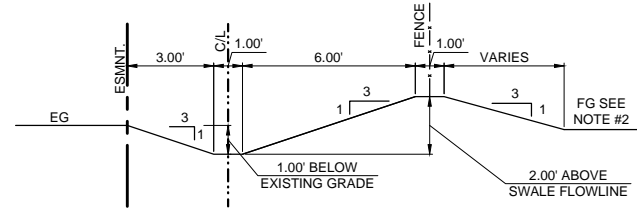
Project No:	6921307
Sheet:	C-10



SANDOVAL COUNTY, NEW MEXICO  
SEC-10, T-22-N, R-6-W  
NAVAJO TRIBAL TRUST



- NOTE:
1. CONTRACTOR MUST VERIFY GRADES AND PIPE ELEVATIONS AND NOTIFY ENGINEER OF ANY DISCREPANCIES OR REQUIRED DEVIATIONS TO PIPE SLOPES, DEPTHS, OUTFALL HEIGHTS OR ELEVATIONS.
  2. FINISHED GRADE CONTOURS AND CALLOUTS (FG) ARE TOP OF GRAVEL AND RIP RAP ELEVATIONS WHERE APPLICABLE.
  3. MINIMUM VERTICAL SEPARATION BETWEEN PIPES 12".
  4. PROPOSED CONTOURS ARE AT 0.5' INTERVALS.
  5. CONTRACTOR TO VERIFY PIPING LOCATIONS PRIOR TO FENCE AND METER POLE INSTALLATION.



Revision	Date	Description	By	Chk

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10/24/2016 1:17:10 PM

Client: The Navajo Nation Location: Reach 24.1 JAN Turnout to JAN Border, NM  
**REACH 24.1 SURGE TANK  
SITE GRADING PLAN  
NAVAJO GALLUP WATER SUPPLY  
PROJECT - REACH 24.1 JAN  
SANDOVAL COUNTY, NEW MEXICO**

Designed	Drawn	Checked
AGR	MVH	AGR

**ANDREW ROBERTSON**  
NEW MEXICO  
15805  
10/23/16  
LICENSED PROFESSIONAL ENGINEER

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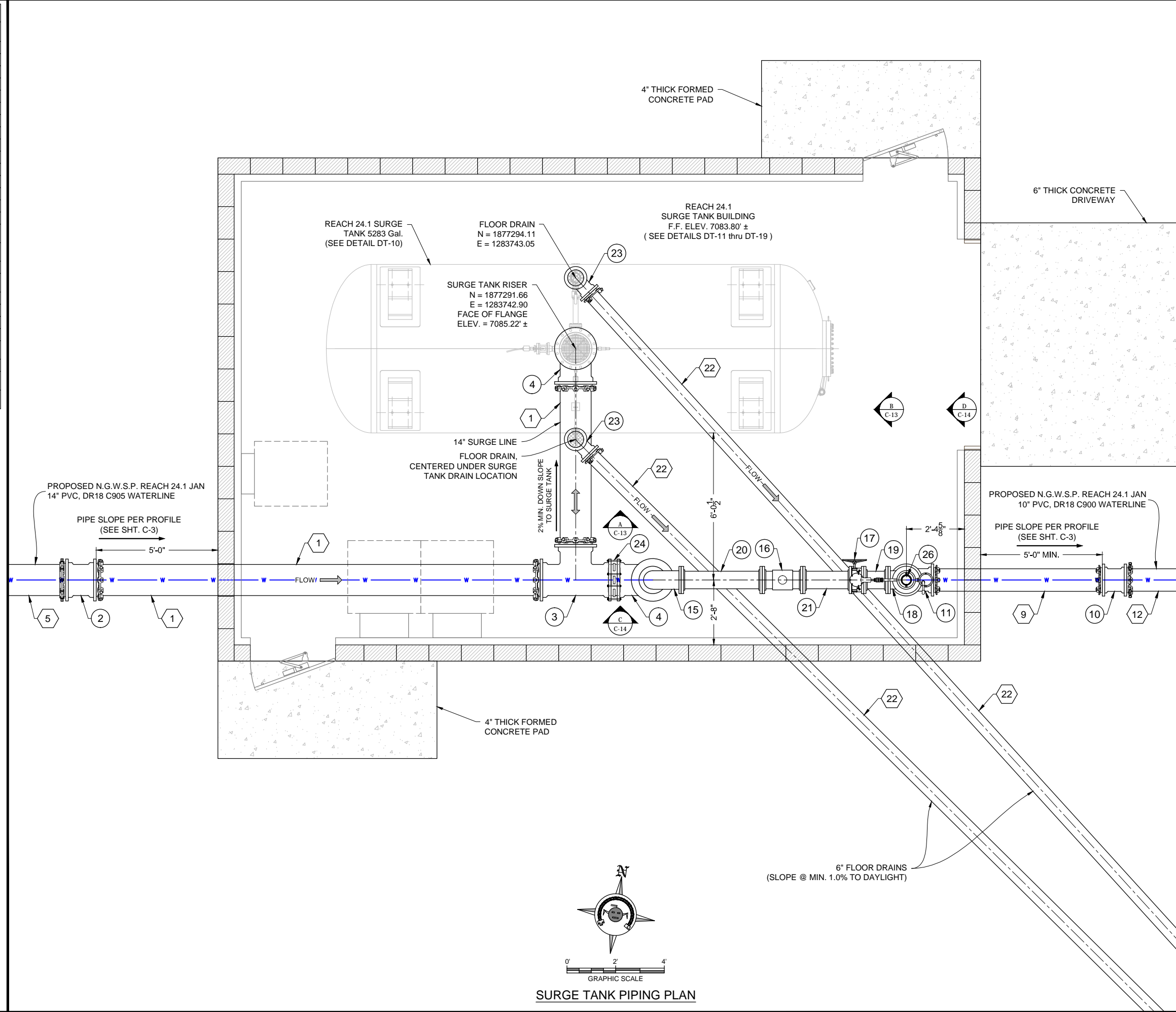
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Date: October 24, 2016  
Scale: Horiz: 1" = 20'  
Vert: N/A  
Project No: 6921307  
Sheet: C-11



KEYED NOTES - SURGE TANK SITE	
Item No.	Description
1	14" DUCTILE IRON PIPE, 350 psi WP
2	14" MJ SLEEVE, DUCTILE IRON, 350 psi WP
3	14" x 14" x 14" MJ TEE, DUCTILE IRON, 350 psi WP
4	14" 90° MJ ELL, DUCTILE IRON, 350 psi WP
5	14" PVC DR18 PIPE
6	14" ANSI CLASS 125 DUCTILE IRON FLANGE
7	14" PROCO FITTING, 173 psi (SEE NOTES #12 & #13, THIS SHEET)
8	14" x 8" FL x FL REDUCER, DUCTILE IRON, 250 psi WP
9	10" DUCTILE IRON PIPE, 350 psi WP
10	10" MJ SLEEVE, DUCTILE IRON, 350 psi WP
11	10" 90° MJ ELL, DUCTILE IRON, 350 psi WP
12	10" PVC DR18 PIPE
13	10" ANSI CLASS 125 DUCTILE IRON FLANGE
14	10" x 8" FL x FL REDUCER, DUCTILE IRON, 250 psi WP
15	8" FL x FL 90° ELL, DUCTILE IRON, 250 psi WP
16	8" FL x FL MAG METER, ELSTER EVOQ4 WITH GROUNDING RINGS, 230 psi WP
17	8" FL x FL BUTTERFLY VALVE WITH HAND WHEEL ACTUATOR AND LIMIT SWITCH, AWWA C504, 250B, 250 psi WP
18	8" x 8" x 8" FL x FL TEE, DUCTILE IRON, 250 psi WP
19	8" FL x FL SPOOL APPROX. 12" LENGTH, DUCTILE IRON, 250 psi WP (ADJUST LENGTH TO FIT IN FIELD)
20	8" FL x FL SPOOL 40" LENGTH, DUCTILE IRON, 250 psi WP
21	8" FL x FL SPOOL 24" LENGTH, DUCTILE IRON, 250 psi WP
22	6" DUCTILE IRON PIPE, 350 psi WP
23	6" 90° MJ ELL, DUCTILE IRON, 350 psi WP
24	14" MJ x MJ ADAPTOR FOR MJ BELL CONNECTIONS, DUCTILE IRON, 350 psi WP
25	8" x 2" TAPPED THREADED FLANGE, ANSI CLASS 150, SS 304
26	2" VACUUM BREAKER / ARV / PRESSURE TRANSDUCER ASSEMBLY (SEE DETAIL DT-10)
27	ADJUSTABLE PIPE SUPPORT W/ U-SHAPED CRADLE (FASTEN BASE TO CONCRETE)

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 FLANGES SHALL BE ANSI CLASS 125/150 FLAT FACED UNLESS OTHERWISE NOTED.
4. ALL BURIED PIPING WITHIN 5 FT 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 PRESSURE BEARING PIPE DUCTILE FITTINGS SHALL BE MJ. NO BURIED DUCTILE IRON PRESSURE BEARING PIPE JOINTS SHALL BE ALLOWED. DO NOT INSTALL ANY BELL-AND-SPIGOT PRESSURE BEARING DUCTILE IRON PIPE JOINTS.
7. FLANGE LOCATIONS AND ELEVATIONS 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 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.
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 MFG'R'S RECOMMENDED TOLERANCES. DO NOT ALLOW BOLTS TO MAKE CONTACT WITH RUBBER JOINT. FIELD VERIFY CONTROL BOLT LENGTHS BEFORE FOUNDATION CONSTRUCTION.
13. INSTALL TEMPORARY 14-INCH ANSI CLASS 125 BLIND FLANGE PRIOR TO FILLING AND FLUSHING PIPELINE. FLUSH LINE FROM STATION +0+39.10 TO STATION 46+84 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 14-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 +0+39.10 TO STATION 46+84 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.

[illegible]





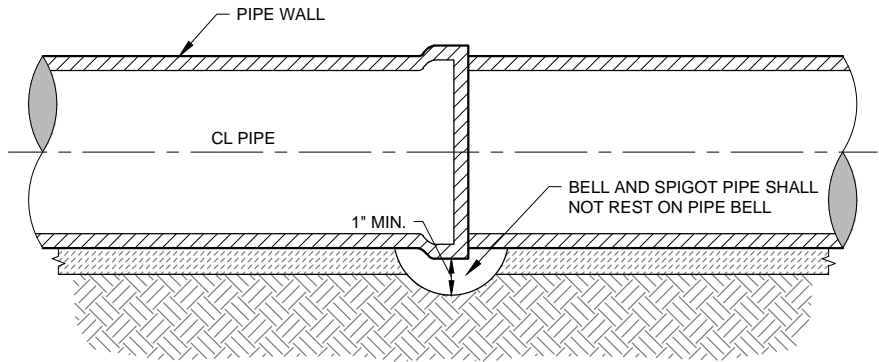






NOTES:

- SOIL CEMENT SLURRY MAY BE USED IN LIEU OF COMPACTED SELECT MATERIAL AT CONTRACTOR'S OPTION AND EXPENSE.
- 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.
- 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.
- 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".

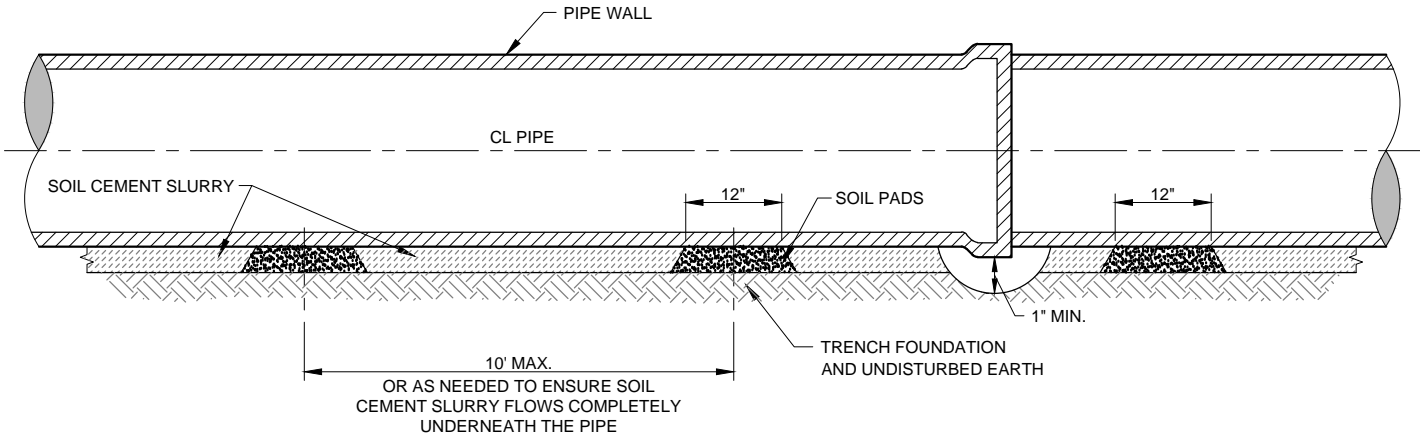


TYPICAL BELL HOLE DETAIL  
NOT TO SCALE

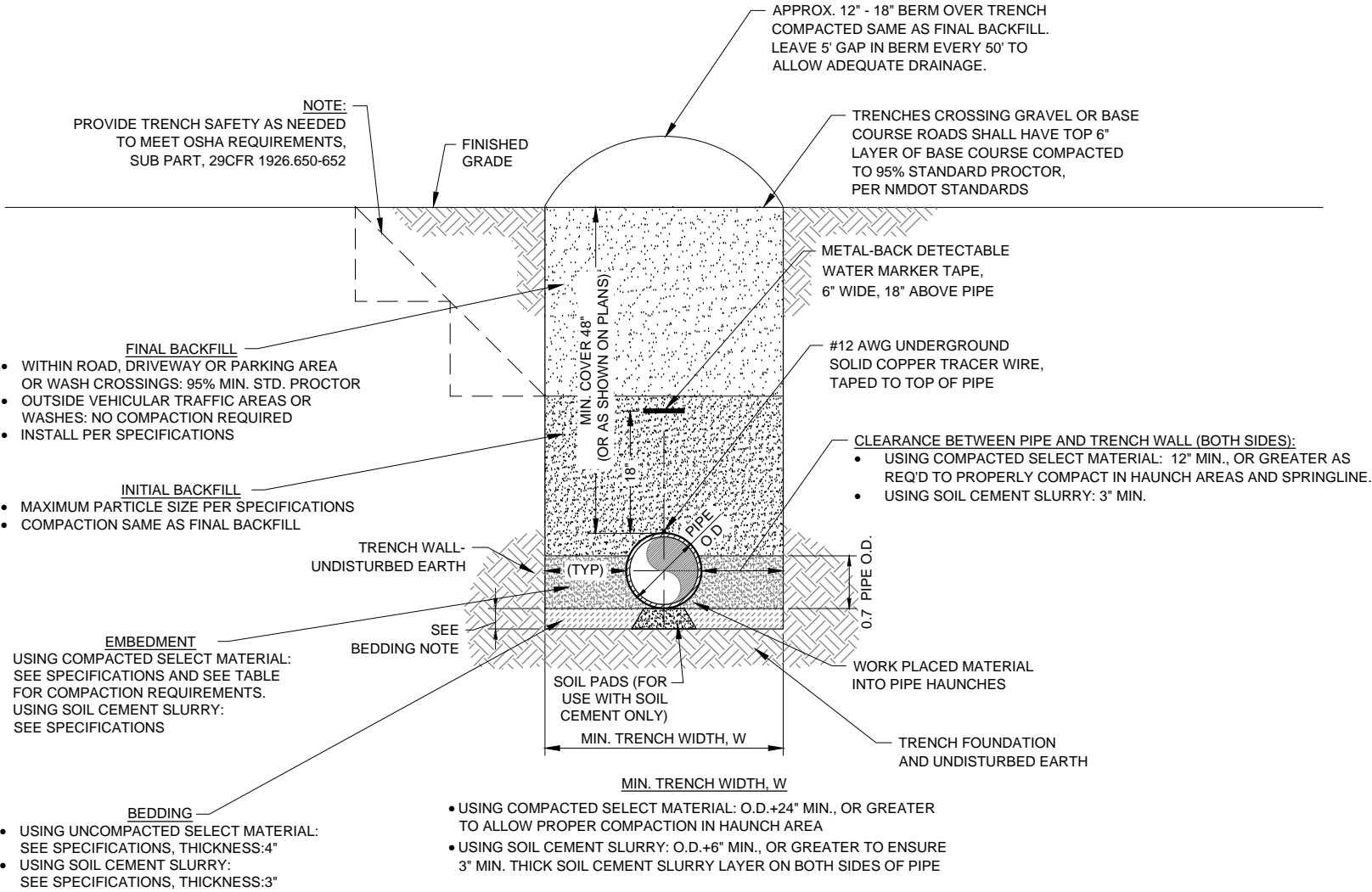
MINIMUM PERCENT COMPACTION FOR EMBEDMENT IN NON-TRAFFICKED AREAS	
CLEAN COARSE-GRAINED SOILS	
Cover Depth	Minimum Compaction
4' to 20'	85%
Coarse-grained soils (sand or gravel), GW, GP, SW, SP, with less than 12% fines	
SANDY OR GRAVELLY FINE-GRAINED SOILS & COARSE-GRAINED SOILS WITH FINES	
Cover Depth	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:

- ALL COMPACTION VALUES BASED ON STD. PROCTOR, ASTM D698. SOIL CLASSIFICATIONS BASED ON ASTM D2487.
- EMBEDMENT WITHIN DRIVING SURFACES OF ALL ROADS, DRIVEWAYS AND PARKING AREAS SHALL BE COMPACTED TO AT LEAST 95% STD. PROCTOR, REGARDLESS OF SOIL TYPE. SOIL CEMENT MAY BE USED IN LIEU OF COMPACTED SELECT MATERIAL.



SOIL CEMENT INSTALLATION WITH SOIL PADS  
NOT TO SCALE



TYPICAL TRENCH DETAIL  
NOT TO SCALE

Client: The Navajo Nation	Location: Reach 24.1 JAN Turnout to JAN Border, NM
<b>PIPELINE TRENCHING DETAILS</b>	
NAVAJO GALLUP WATER SUPPLY PROJECT - REACH 24.1 JAN SANDOVAL COUNTY, NEW MEXICO	
Designed: AGR	Drawn: AAV
Checked: AGR	
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Date: October 24, 2016	Scale: Horiz: NONE Vert: N/A
Project No: 6921307	Sheet: DT-1

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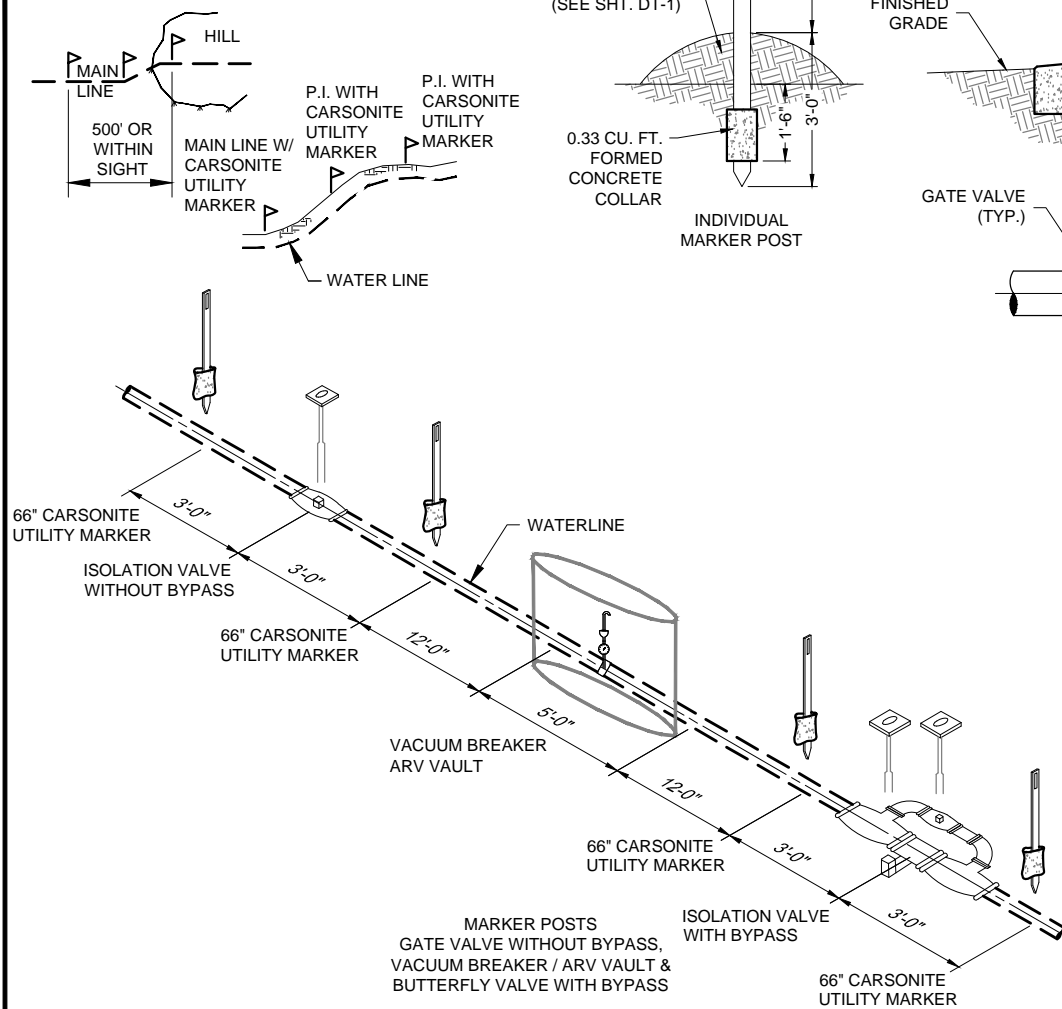
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Drawn: Reach 24.1 JAN Trench Details.dwg  
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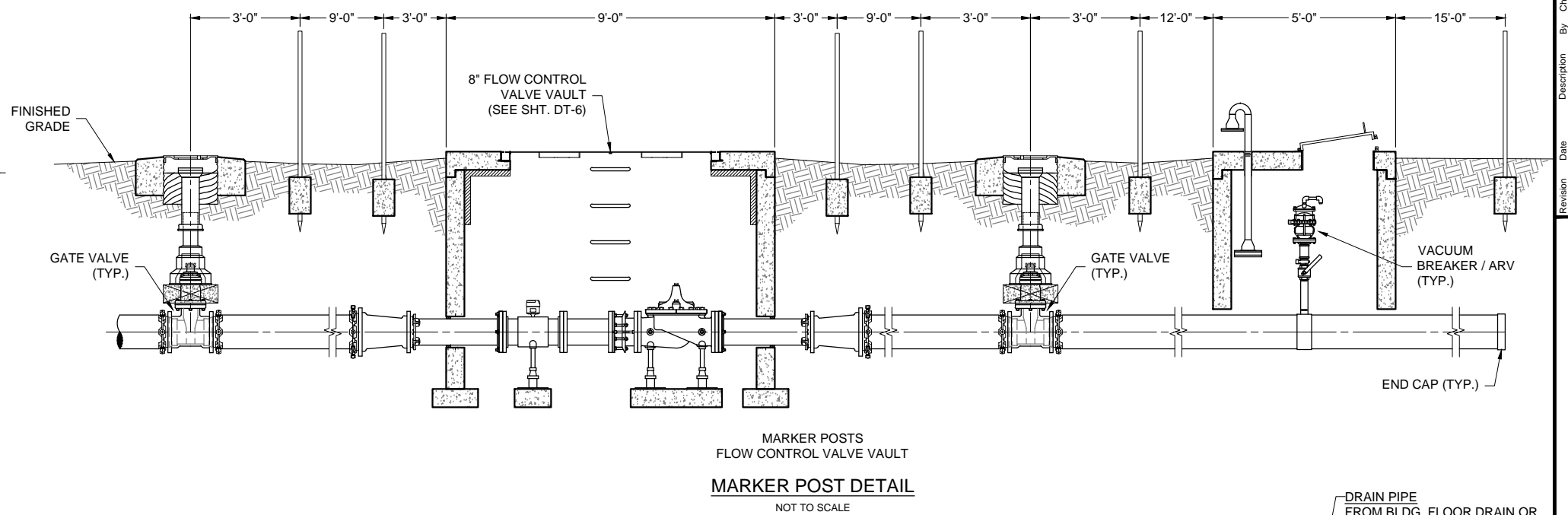
- NOTE:
- CARSONITE UTILITY MARKER ON ALL P.I.'S AND GRADE CHANGES.
  - MAXIMUM DISTANCE BETWEEN CARSONITE UTILITY MARKERS SHALL BE 1500 LF.



MARKER POSTS  
TEE & ELL

**TYPICAL MARKER POSTS**

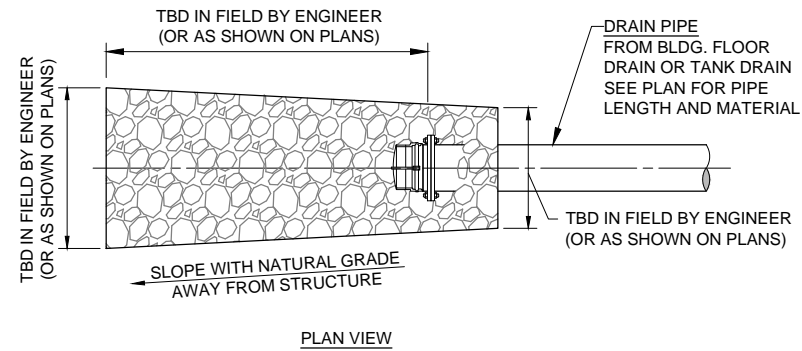
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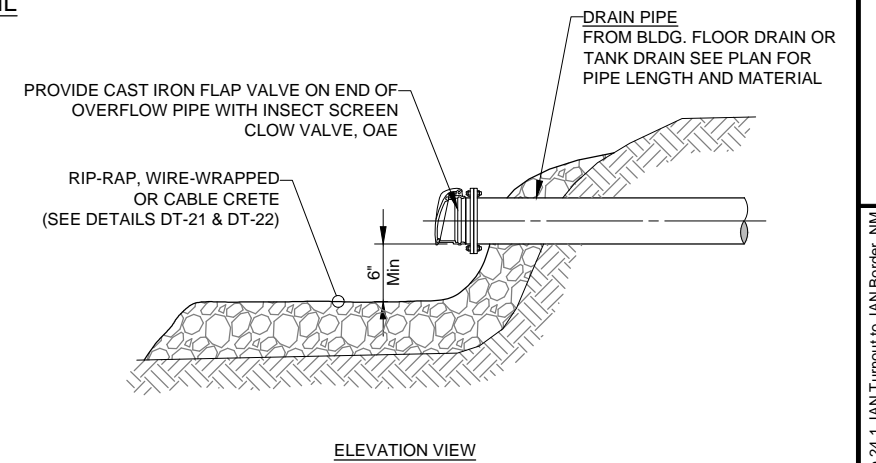
MARKER POSTS  
FLOW CONTROL VALVE VAULT

**MARKER POST DETAIL**

NOT TO SCALE



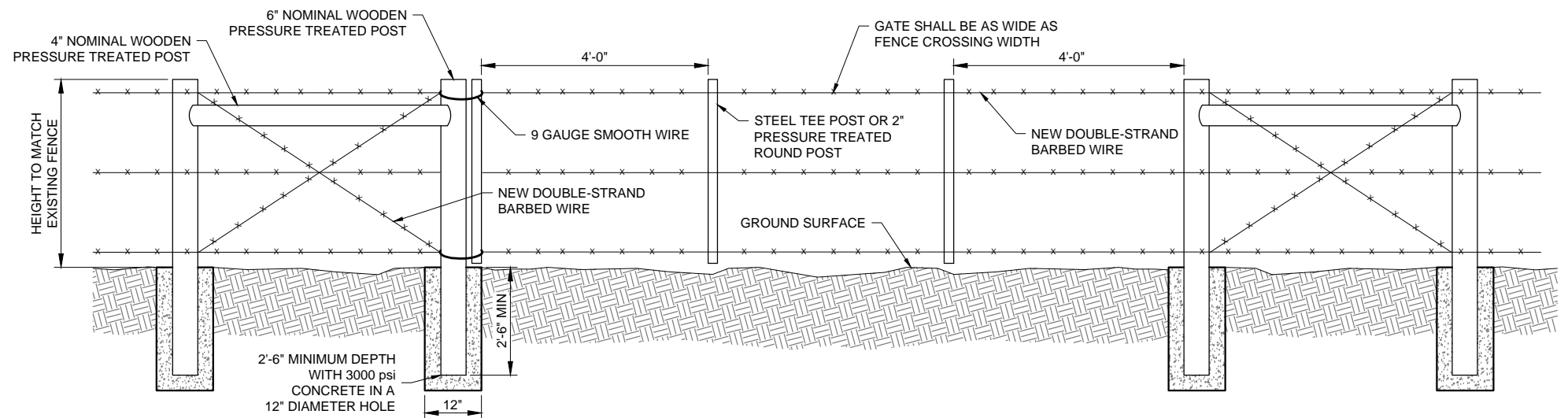
**PLAN VIEW**



**ELEVATION VIEW**

**TYPICAL SPLASH PAD DETAIL**

NOT TO SCALE



- NOTES:
- EXISTING FENCE SHALL NOT BE CUT UNTIL SECURED TO H-BRACE ASSEMBLY.
  - INSTALL RANCHER STYLE GATE AT ALL FENCE CROSSINGS UNLESS SPECIFICALLY NOTED OTHERWISE ON PLANS.

**"RANCHER STYLE" GATE WITH H-BRACE  
PULL ASSEMBLY AT FENCE CROSSING**

NOT TO SCALE

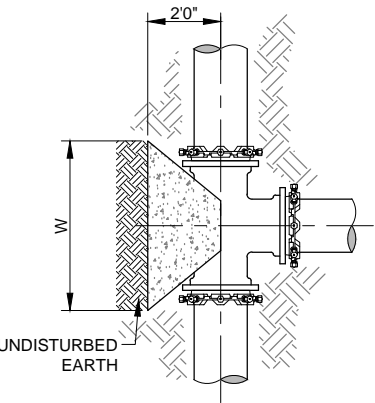
<p>Client: The Navajo Nation Location: Reach 24.1 JAN Turnout to JAN Border, NM</p> <p><b>MISCELLANEOUS CONSTRUCTION DETAILS</b></p> <p><b>NAVAJO GALLUP WATER SUPPLY</b></p> <p><b>PROJECT - REACH 24.1 JAN</b></p> <p><b>SANDOVAL COUNTY, NEW MEXICO</b></p>	<p>Designed: AGR</p> <p>Drawn: AAV</p> <p>Checked: AGR</p>	<p>10/23/16</p> <p>15805</p> <p>ANDREW ROBERTSON</p> <p>REGISTERED PROFESSIONAL ENGINEER</p>	<p>THIS DRAWING IS INCOMPLETE AND NOT TO BE USED FOR CONSTRUCTION UNLESS IT IS STAMPED, SIGNED AND DATED</p> <p>NOTICE OF EXTENDED PAYMENT PROVISION: THIS CONTRACT ALLOWS THE OWNER TO MAKE PAYMENT WITHIN 45 DAYS AFTER SUBMISSION OF AN UNDISPUTED REQUEST FOR PAYMENT.</p>	<p><b>811</b></p> <p>Know what's below. Call before you dig.</p>
	<p>Date: October 24, 2016</p> <p>Scale: Horiz: NONE</p> <p>Vert: N/A</p> <p>Project No: 6921307</p> <p>Sheet: DT-2</p>	<p>Souder, Miller &amp; Associates</p> <p>3451 CANDELARIA ROAD, SUITE D</p> <p>ALBUQUERQUE, NM 87107</p> <p>Phone: (505) 299-0942 Toll-Free (877) 299-0942 Fax: (505) 295-3430</p> <p>www.soudermiller.com</p> <p>Serving the Southwest &amp; Rocky Mountains</p> <p>Albuquerque, Colorado, Hobbs, Farmington, Las Cruces, Roswell, Santa Fe, NM</p> <p>Cortez, Grand Junction, CO, Siltco, AZ, Moab, UT, El Paso, TX</p>	<p>10/23/2016 1:18:03 PM</p>	<p>By: [Signature]</p> <p>Description: [Blank]</p> <p>Date: [Blank]</p> <p>Revision: [Blank]</p>



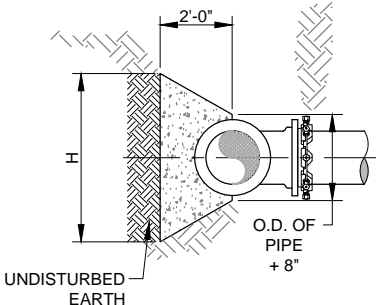
THRUST BLOCK DIMENSION SCHEDULE			
Pipe Location	Pipe Size (Inches)	90° Bend H x W	Tee H x W
Surge Tank	14"	5'-0" x 5'-0"	4'-6" x 4'-6"
Surge Tank	10"	3'-6" x 3'-6"	N/A
Flush Valves	10" x 10" x 2"	N/A	1'-0" x 1'-0"

GENERAL NOTES

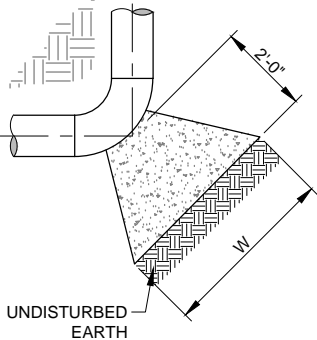
- SOIL BEARING USED TO DETERMINE THRUST BLOCK SIZING FROM X8E VINYARD REPORT NO. 14-1-087 DATED DECEMBER 30, 2014
- ALL CONCRETE SHALL BE 3000 psi, MINIMUM COMPRESSIVE STRENGTH IN 28 DAYS



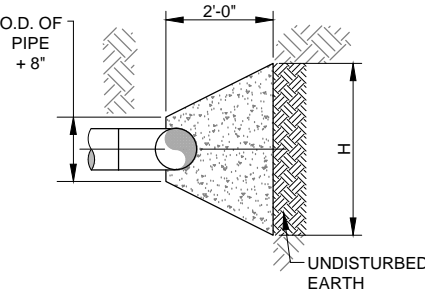
PLAN VIEW  
CONCRETE BLOCKING  
FOR TEE



ELEVATION VIEW  
CONCRETE BLOCKING  
FOR TEE



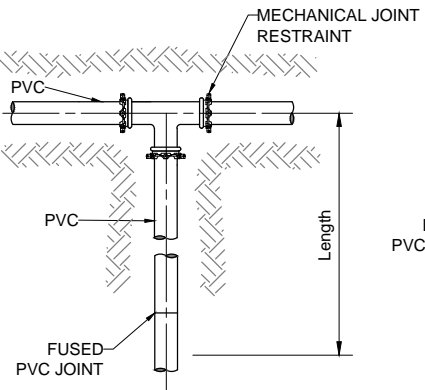
PLAN VIEW  
CONCRETE BLOCKING  
FOR ELBOW



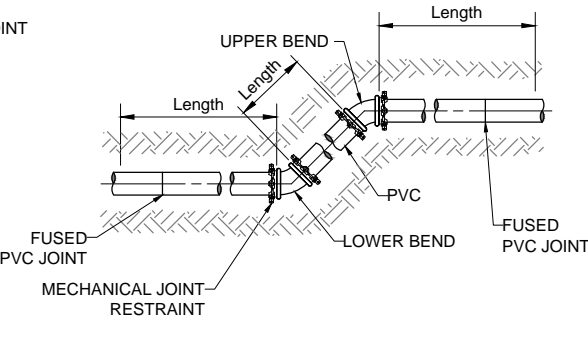
ELEVATION VIEW  
CONCRETE BLOCKING  
FOR ELBOW

THRUST BLOCK DETAIL  
NOT TO SCALE

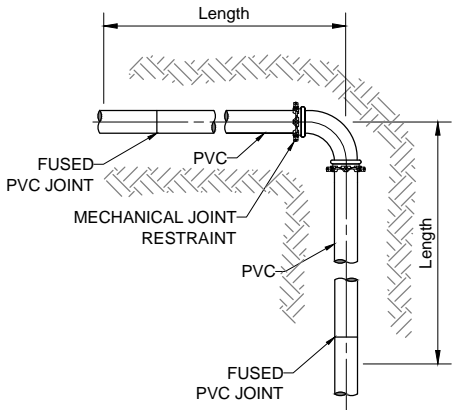
Minimum Required Restraint Lengths 14", 10" & 2" DR18 PVC				
Fitting	Pipe Size	Test Pressure (psi)	Required Restraint Length (ft)	
Isolation Valve / Dead End	14"	235	195	
Isolation Valve / Dead End	10"	235	140	
Isolation Valve / Dead End (Flush Valve)	2"	235	35	
From End of Casing	10"	235	85	
Horizontal Bend or Sweep				
90°	10"	235	65	
45°	10"	235	30	
22.5°	14"	235	20	
22.5°	10"	235	20	
11.25°	10"	235	20	
90° (Flush Valve - no pressure test)	2"	200	20	
45° (Flush Valve - no pressure test)	2"	200	20	
Transition				
Reducer	10" x 8"	235	50	
Vertical Bend			Upper Bend	Lower Bend
22.5°	10"	235	30	20
11.25°	10"	235	20	N/A



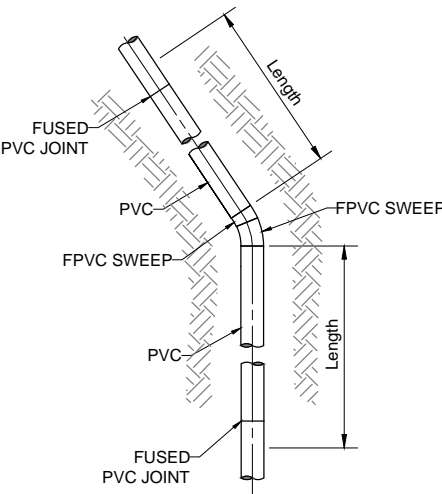
PLAN VIEW  
MECHANICAL JOINT RESTRAINT  
FOR TEE



ELEVATION VIEW  
MECHANICAL JOINT RESTRAINT  
FOR VERTICAL OFFSET



PLAN VIEW  
MECHANICAL JOINT RESTRAINT  
FOR HORIZONTAL BEND

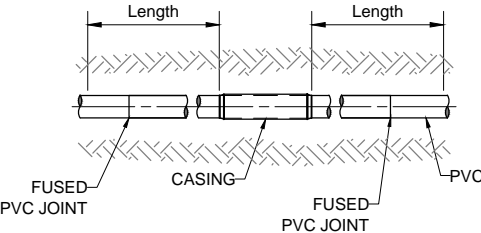


PLAN VIEW  
FUSED JOINT RESTRAINT  
FOR HORIZONTAL SWEEP

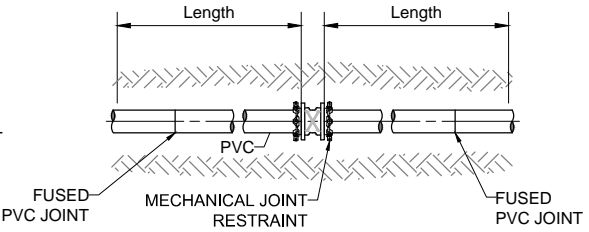
MECHANICAL / FUSED JOINT RESTRAINTS  
NOT TO SCALE

NOTES:

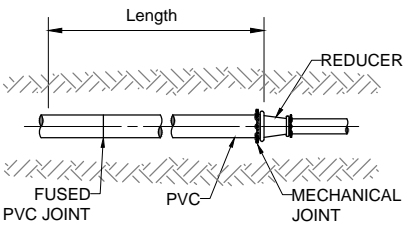
- MECHANICAL JOINT RESTRAINTS SHALL BE RATED TO AT LEAST 235 psi.
- MECHANICAL JOINT RESTRAINTS INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.
- APPLY CATHODIC PROTECTION TO ALL BURIED METALLIC COMPONENTS LOCATED WITHIN CORROSIVE SOILS ZONES, AS DESIGNATED IN PLANS AND/OR SPECIFICATIONS
- ALL RESTRAINED PIPE JOINTS SHALL BE FUSIBLE PVC. NO BELL HARNESS RESTRAINTS SHALL BE ALLOWED.
- ALL SITE PIPING SHALL BE FULLY RESTRAINED.
- WHERE MULTIPLE FITTING / VALVE RESTRAINT LENGTHS OVERLAP, THE RESTRAINT LENGTHS FOR EACH APPURTENANCE SHALL BE ADDED TOGETHER, UNLESS OTHERWISE SHOWN ON PLANS.
- 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 CONTRACTORS EXPENSE.



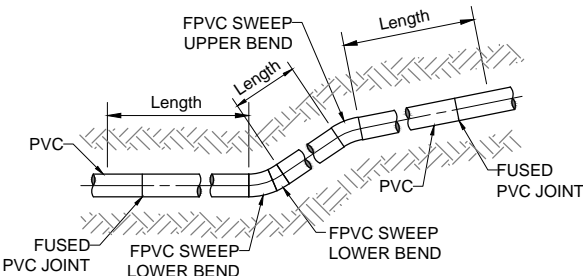
PLAN VIEW  
FUSED JOINT RESTRAINT FOR CASING



PLAN VIEW  
MECHANICAL JOINT RESTRAINT  
FOR GATE VALVE



PLAN VIEW  
MECHANICAL JOINT RESTRAINT  
FOR REDUCERS



ELEVATION VIEW  
FUSED JOINT RESTRAINT  
FOR VERTICAL SWEEP

Client: The Navajo Nation Location: Reach 24.1 JAN Turnout to JAN Border, NM

Designed GYQ Drawn AAV Checked AGR

811 Know what's below. Call before you dig.

Date: October 24, 2016

Scale: Horiz: NONE Vert: N/A

Project No: 6921307

Sheet: DT-3

CHK'D

By

Description

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Revision

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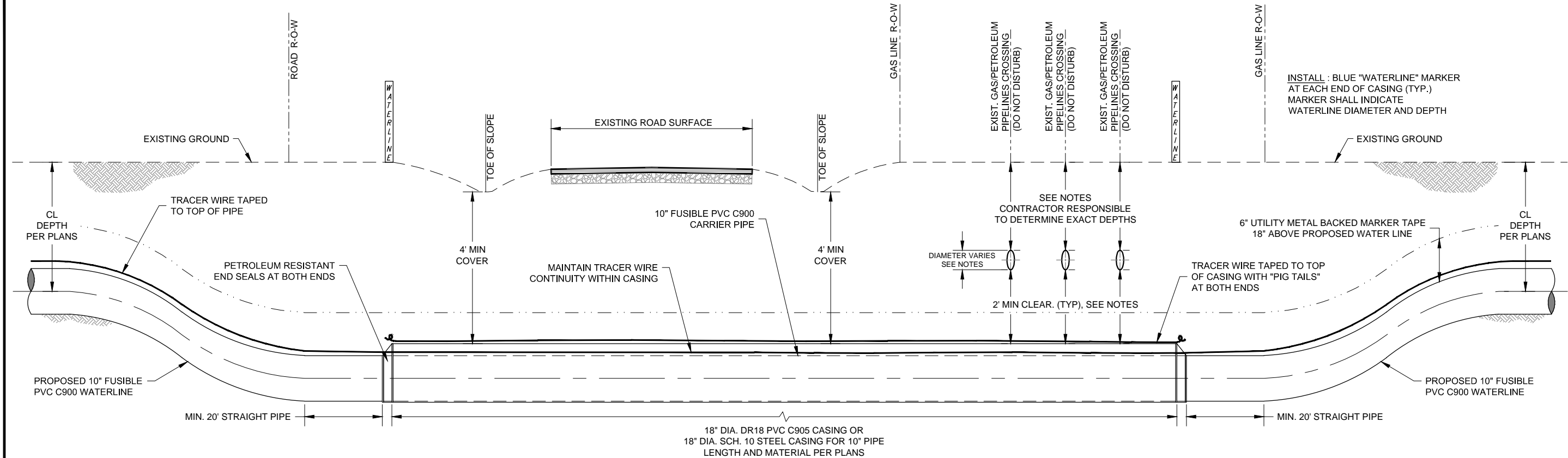
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TYPICAL SINGLE/MULTIPLE GAS PIPELINE AND ACCESS ROAD CROSSING DETAIL  
NOT TO SCALE

SPECIAL NOTES AND CONTACTS-UTILITY PIPELINE CROSSINGS

NOTES:

1. NOTIFY GAS LINE COMPANIES 30 WORKING DAYS AND CALL NM ONE-CALL AT LEAST 3 WORKING DAYS PRIOR TO GRADING, CROSSING, MATERIAL STORAGE, OR EQUIPMENT MOVING ACROSS GAS LINE RIGHT-OF-WAY OR ADJACENT ACCESS ROADS.
2. GAS LINE COMPANY REPRESENTATIVE MUST BE PRESENT DURING ALL CONSTRUCTION ACTIVITIES WITHIN GAS LINE RIGHT-OF-WAY, INCLUDING GRADING, EXCAVATION, AND CLEANUP.
3. CONTRACTOR RESPONSIBLE TO LOCATE AND EXPOSE ALL EXISTING GAS / PETROLEUM LINES, IN ACCORDANCE WITH GAS COMPANY REQUIREMENTS.
4. EXCAVATE BY HAND OR VACUUM DRILL WITHIN 2 FEET OF GAS LINE (OR MORE AS REQUIRED BY GAS COMPANY). IF GAS LINE COMPANY APPROVES, CONTRACTOR MAY INSTALL CASING BY BORING, USING FUSIBLE PVC CASING WITH INTERIOR WELD BEAD REMOVED.
5. CROSS UNDER GAS LINE (2' MIN. CLEARANCE TO TOP OF CASING), UNLESS OTHERWISE NOTED. WHERE MULTIPLE GAS LINES ARE CROSSED IN THE SAME ROW, MAINTAIN MIN. CLEARANCE UNDER THE LOWEST GAS LINE.
6. COMPLETE ANY AND ALL ENCROACHMENT AGREEMENTS REQUIRED BY GAS LINE COMPANIES. ABIDE BY ALL CONDITIONS STIPULATED BY GAS LINE COMPANIES.
7. CONTRACTOR SHALL NOT SUSPEND EXISTING GAS LINE PIPE MORE THAN 12 FEET WITHOUT SOIL BEDDING OR OTHER SUPPORT APPROVED BY GAS LINE COMPANY.
8. HEAVY EQUIPMENT MUST CROSS PIPELINE ONLY AT CROSSING LOCATIONS APPROVED BY GAS LINE COMPANIES.
9. FOR MINIMUM FUSIBLE PVC PIPE RESTRAINT REQUIREMENTS ON EACH SIDE OF CASING, SEE TABLE DETAIL DT-3. ALL REMAINING CARRIER PIPE WITHIN A 200 FT. RADIUS OF GAS LINE SHALL EITHER BE FUSIBLE PVC OR BELL-AND-SPIGOT PVC WITH PETROLEUM RESISTANT GASKETS. CASING SHALL EITHER BE FUSIBLE PVC WITH INTERIOR WELD BEAD REMOVED OR BELL AND SPIGOT PVC WITH PETROLEUM RESISTANT GASKETS.
10. TRACER WIRE CONTINUITY SHALL BE MAINTAINED ACROSS THE CASING.
11. THE INSIDE OF THE CASING AND THE OUTSIDE OF THE CARRIER PIPE MUST BE FREE OF ANY IRREGULARITIES THAT WOULD CAUSE A POINT LOAD ON CARRIER PIPE. ENGINEER RESERVES THE RIGHT TO REQUIRE SPACERS (MAX. 10' APART) IF CASING OR CARRIER PIPE ARE NOT SUFFICIENTLY SMOOTH AND REGULAR. EXTERIOR WELD BEADS SHALL BE REMOVED FROM FUSIBLE PVC CARRIER PIPE.
12. EXCAVATIONS OUTSIDE THE ROADWAY FORESLOPES SHALL BE COMPACTED AS SPECIFIED IN THE CONSTRUCTION DOCUMENTS. EXCAVATION WITHIN THE TOE OF THE FORESLOPES SHALL BE COMPACTED TO 95% MAXIMUM DRY DENSITY (STANDARD PROCTOR).

(1) = STA: 16+26.82 (APPROX.)  
ENCANA  
CONSTRUCTION COORDINATOR: WESLEY RODGERS  
505-599-2404 OR 720-357-3736  
LEAD INSPECTOR: BUD KRAMME 505-330-7096  
PRODUCTION COORDINATOR:  
TONY FERRARI 505-258-3875  
GAS PIPELINE (4" DIA., DEPTH UNKNOWN)  
SEC-10, T-22-N, R-6-W

(2) = STA: 16+50.70 (APPROX.)  
WPX ENERGY (2 LINES)  
FIELD CONTACT: MARK LEPICH 505-320-1338 OR  
505-333-1803  
FIELD CONTACT: ROBERT BRADSHAW 505-386-8887  
GAS PIPELINE (4" DIA., DEPTH UNKNOWN)  
OIL PIPELINE (4" DIA., DEPTH UNKNOWN)  
SEC-10, T-22-N, R-6-W

(3) = STA: 99+19.27 (APPROX.)  
ENCANA  
CONSTRUCTION COORDINATOR: WESLEY RODGERS  
505-599-2404 OR 720-357-3736  
LEAD INSPECTOR: BUD KRAMME 505-330-7096  
PRODUCTION COORDINATOR:  
TONY FERRARI 505-258-3875  
GAS PIPELINE (6" DIA., DEPTH UNKNOWN)  
SEC-12, T-22-N, R-6-W

(4) = STA: 142+13.59 (APPROX.)  
ENCANA  
CONSTRUCTION COORDINATOR: WESLEY RODGERS  
505-599-2404 OR 720-357-3736  
LEAD INSPECTOR: BUD KRAMME 505-330-7096  
PRODUCTION COORDINATOR:  
TONY FERRARI 505-258-3875  
GAS PIPELINE (4" DIA., DEPTH UNKNOWN)  
SEC-12, T-22-N, R-6-W

Revision	Date	Description	By	Chk'd
Date Rec'd 24.1 JAN 2016 2:41 PM 10/2/2016 1:18:43 PM				

**SMA**  
Souder, Miller & Associates  
Engineering & Surveying

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www.soudermiller.com  
Serving the Southwest & Rocky Mountains  
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Client: The Navajo Nation Location: Reach 24.1 JAN Turnout to JAN Border, NM

**GAS LINE AND ROAD CROSSING DETAIL**  
**NAVAJO GALLUP WATER SUPPLY**  
**PROJECT - REACH 24.1 JAN**  
**SANDOVAL COUNTY, NEW MEXICO**

Designed GMM	Drawn MLS	Checked AGR
-----------------	--------------	----------------

ANDREW ROBERTSON  
NEW MEXICO  
15805  
10/23/16  
REGISTERED PROFESSIONAL ENGINEER

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

NOTICE OF EXTENDED  
PAYMENT PROVISION:  
THIS CONTRACT ALLOWS THE  
OWNER TO MAKE PAYMENT  
WITHIN 45 DAYS AFTER  
SUBMISSION OF  
AN UNDISPUTED REQUEST  
FOR PAYMENT.

**811**  
Know what's  
below.  
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Date: October 24, 2016

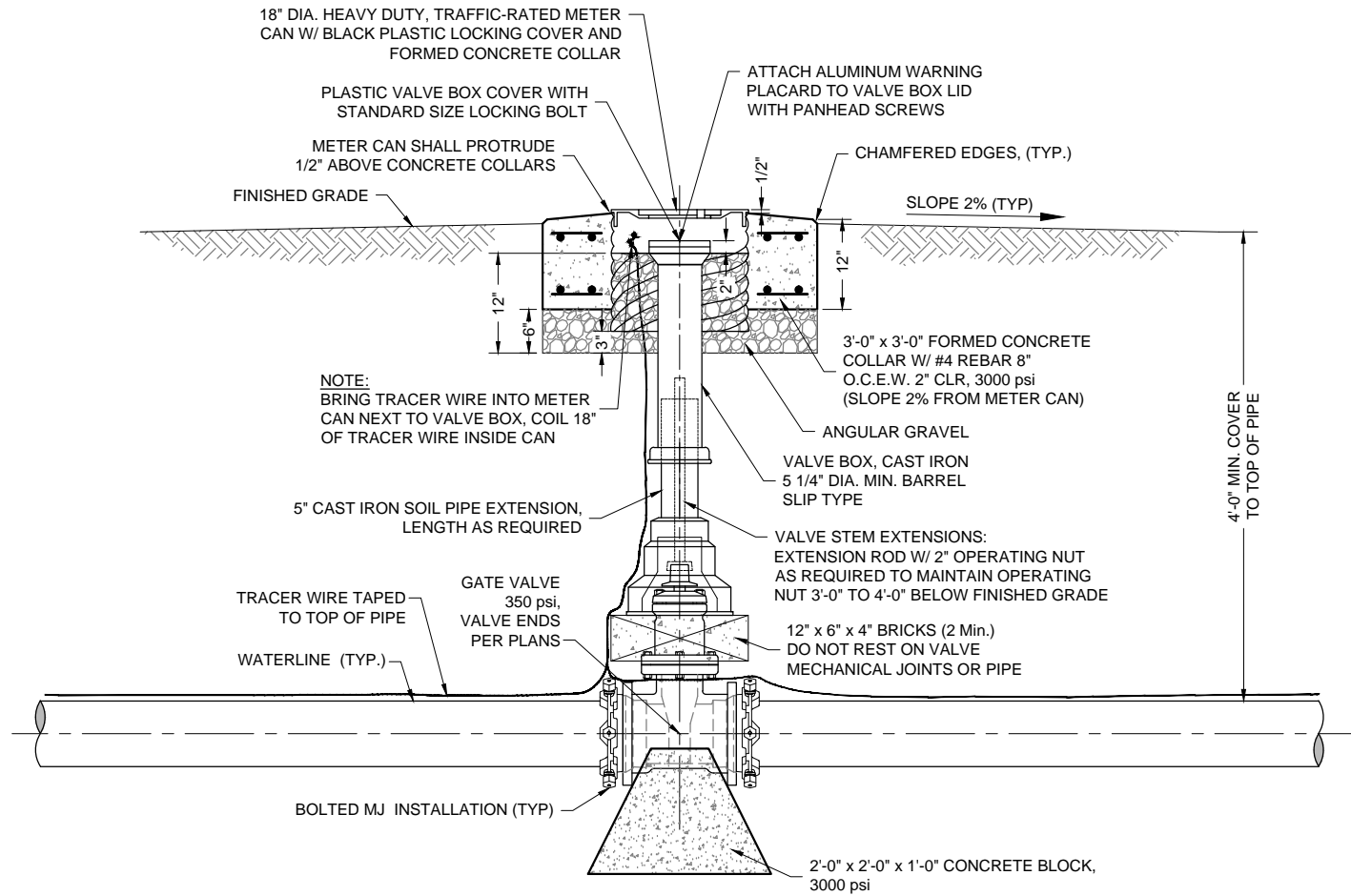
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Vert: N/A

Project No: 6921307

Sheet: DT-4



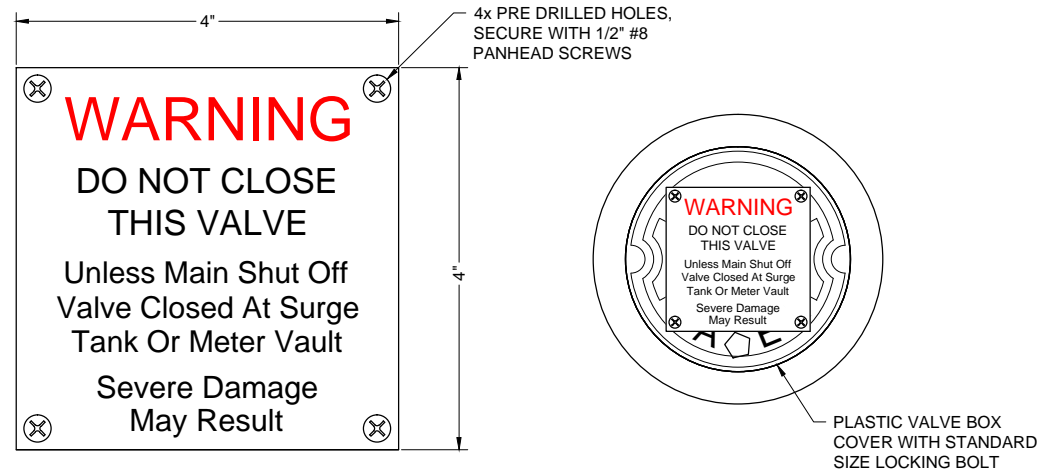
- NOTES:
1. CONTRACTOR SHALL SCRIBE ALL CONCRETE VALVE COLLARS, PER DETAIL THIS SHEET. CONCRETE SHALL BE SCRIBED PRIOR TO CURING, OR ETCHED AFTER CURING WITH 4" GRINDER.
  2. AFFIX WARNING PLACARD TO VALVE BOX COVER INSIDE METER CAN.
  3. ALL MATERIALS WORKING PRESSURE RATED TO AT LEAST THE PRESSURE RATING OF THE PIPE, UNLESS OTHERWISE NOTED.
  4. ALL BURIED VALVES SHALL BE COATED WITH FUSION BONDED EPOXY, INTERIOR AND EXTERIOR.
  5. NOTE VALVE ENDS SHALL BE MJ x MJ.
  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. INSTALL CARSONITE VALVE MARKERS ON BOTH SIDES OF VALVE, 3'-0" FROM CENTER OF VALVE. SEE DETAIL, SHT. DT-2.



ELEVATION VIEW

**TYPICAL GATE VALVE DETAIL**

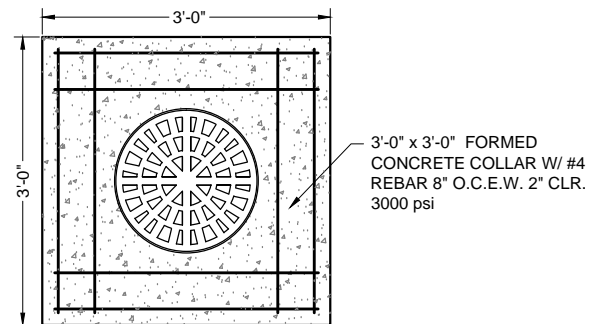
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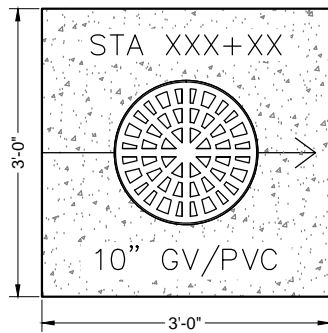
PLAN VIEW

**TYPICAL WARNING PLACARD DETAIL**

NOT TO SCALE



PLAN VIEW - REBAR



PLAN VIEW - SURFACE

**TYPICAL MAINLINE COLLAR DETAIL**

NOT TO SCALE

Revision	Date	Description	By	Chk'd

**SMA** SOUDER, MILLER & ASSOCIATES  
3451 CANDELARIA ROAD, SUITE D  
ALBUQUERQUE, NM 87107  
Phone (505) 299-0942 Toll-Free (877) 299-0942 Fax (505) 295-3430  
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10/24/2016 1:20:05 PM

Client: The Navajo Nation Location: Reach 24.1 JAN Turnout to JAN Border, NM

**PIPELINE GATE VALVE DETAIL**  
**NAVAJO GALLUP WATER SUPPLY**  
**PROJECT - REACH 24.1 JAN**  
**SANDOVAL COUNTY, NEW MEXICO**

Designed	Drawn	Checked
AGR	AAV	AGR

ANDREW ROBERTSON  
NEW MEXICO  
15805  
10/23/16  
LICENSED PROFESSIONAL ENGINEER

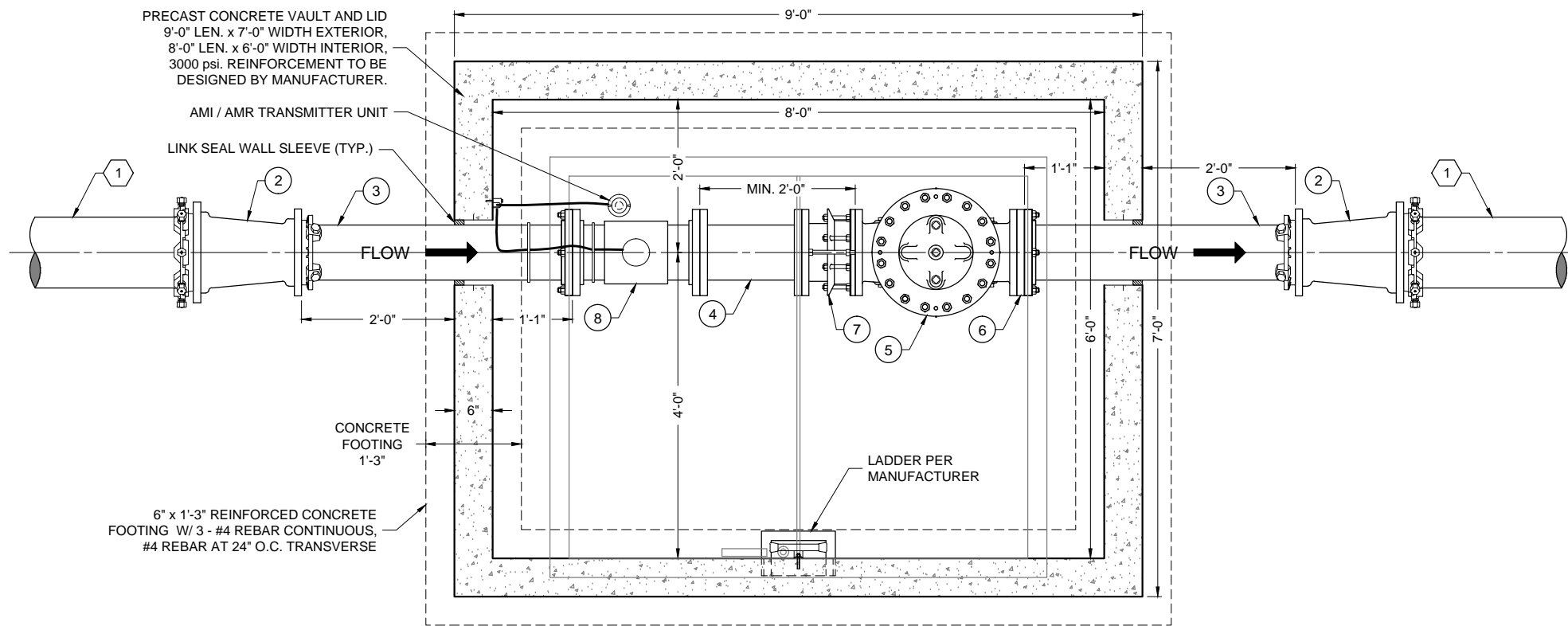
THIS DRAWING IS INCOMPLETE AND NOT TO BE USED FOR CONSTRUCTION UNLESS IT IS STAMPED, SIGNED AND DATED.

NOTICE OF EXTENDED PAYMENT PROVISION:  
THIS CONTRACT ALLOWS THE OWNER TO MAKE PAYMENT WITHIN 45 DAYS AFTER SUBMISSION OF AN UNDISPUTED REQUEST FOR PAYMENT.

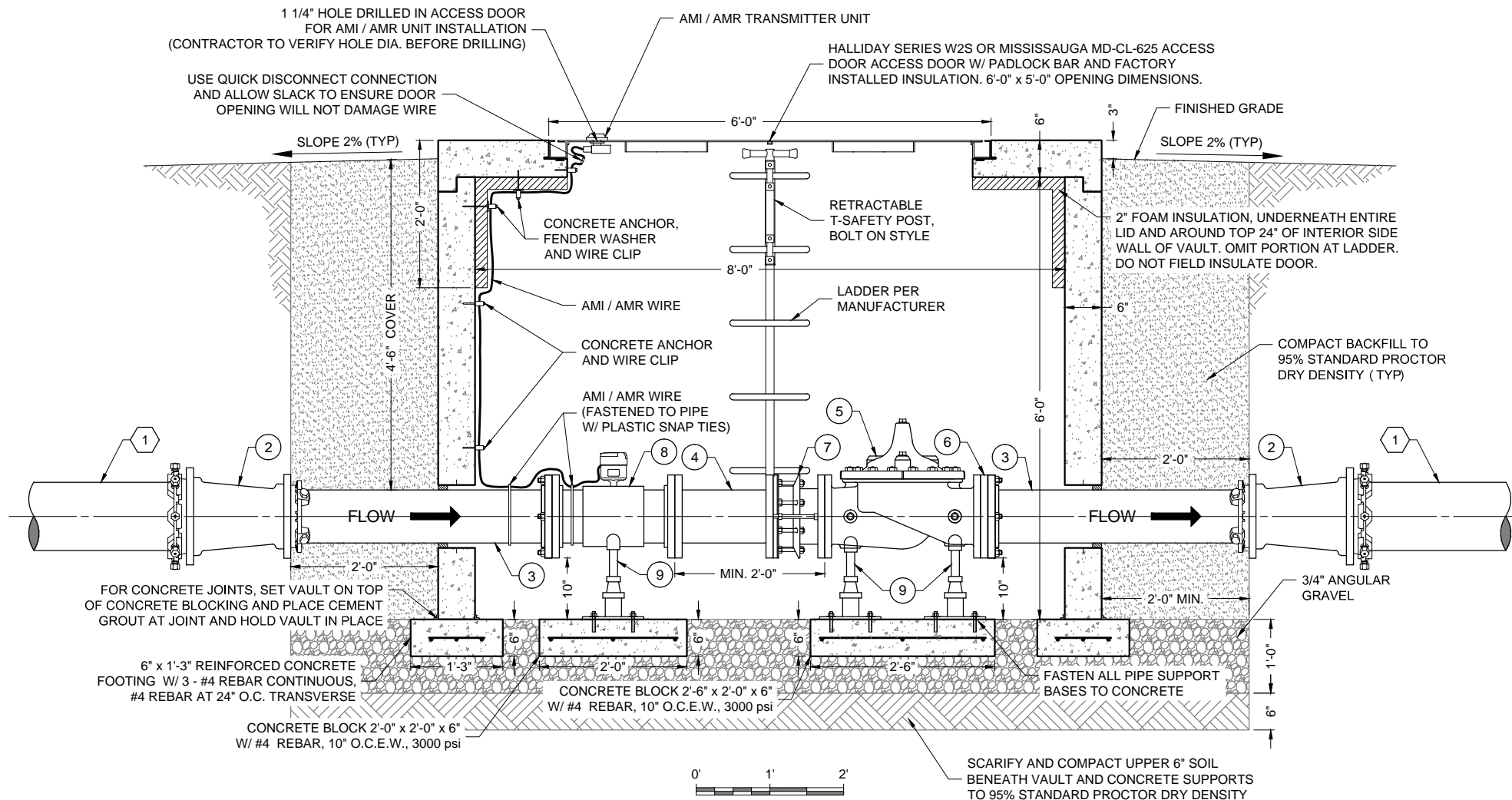
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Date: October 24, 2016  
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Vert: N/A  
Project No: 6921307  
Sheet: DT-5





PLAN VIEW



ELEVATION VIEW  
CONTROL VALVE VAULT DETAIL

# KEYED NOTES - 8" RF CONTROL VALVE & METER VAULT

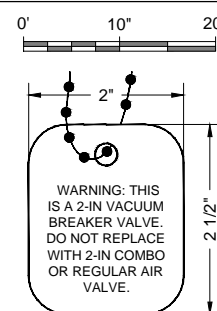
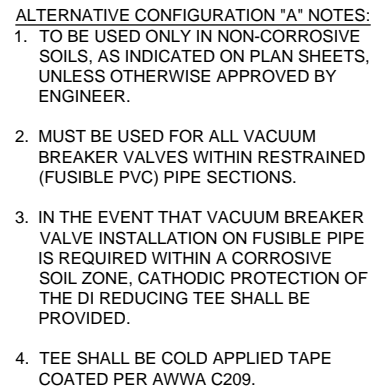
Item No.	Description
1	10" PVC, DR18
2	10" x 8" MJ x MJ REDUCER, 350 psi
3	8" x 3'-7" LENGTH FL x PE SPOOL, DUCTILE IRON
4	8" x 1'-5" MIN. LENGTH FL x FL SPOOL, DUCTILE IRON
5	8" SINGER FLOW CONTROL VALVE, MODEL 106-RF-X107-G, 250 psi
6	8" SINGER VALVE ORIFICE HOUSING ASSEMBLY, DUCTILE IRON
7	8" DISMANTLING JOINT, FBE COATED W/ 304 SS BOLTS, ROMAC MODEL DJ400, AWWA C207 CLASS E FLANGE, 275 psi
8	8" FL x FL MAG METER, ELSTER EVOQ4 WITH GROUNDING RINGS, 230 psi
9	ADJUSTABLE PIPE SUPPORT W/ CRADLE

## NOTES:

- ALL FLANGES SHALL BE ANSI CLASS 150 (STEEL) OR ANSI CLASS 125 (IRON). CONTRACTOR SHALL ENSURE ALL FLANGES / GASKETS ARE COMPATIBLE.
- 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 AWWA C209.
- CONTRACTOR SHALL ETCH ALL VAULT LID WITH 4" GRINDER AS FOLLOWS: PIPE STATION, VALVE SIZE, "CONTROL VALVE/ MAG METER", PIPE SIZE AND MATERIAL, WITH DIRECTIONAL ARROWS.
- ALL MATERIALS RATED TO AT LEAST 235 psi UNLESS OTHERWISE NOTED.

Client: The Navajo Nation	Location: Reach 24.1 JAN Turnout to JAN Border, NM
<b>RATE OF FLOW CONTROL VALVE AND MAG METER VAULT DETAIL</b> <b>NAVAJO GALLUP WATER SUPPLY PROJECT - REACH 24.1 JAN SANDOVAL COUNTY, NEW MEXICO</b>	
Designed: AGR	Drawn: AAV
Checked: AGR	
<p>THIS DRAWING IS INCOMPLETE AND NOT TO BE USED FOR CONSTRUCTION UNLESS IT IS STAMPED, SIGNED AND DATED</p> <p>NOTICE OF EXTENDED PAYMENT PROVISION: THIS CONTRACT ALLOWS THE OWNER TO MAKE PAYMENT WITHIN 45 DAYS AFTER SUBMISSION OF AN UNDISPUTED REQUEST FOR PAYMENT.</p>	
Date: October 24, 2016	
Scale: Horiz: AS SHOWN Vert: N/A	
Project No: 6921307	
Sheet: DT-6	





### VALVE WARNING TAG DETAIL

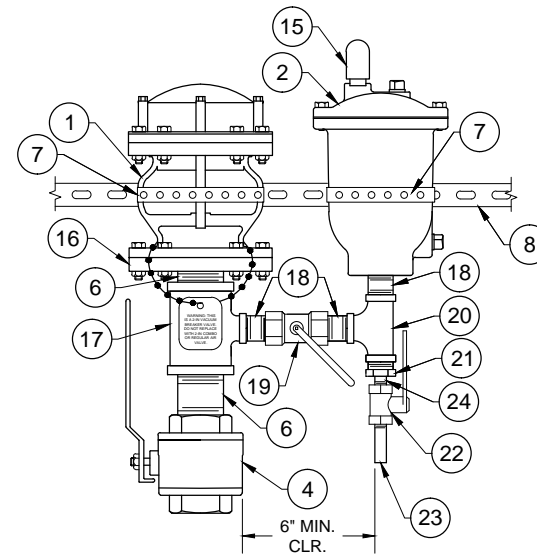
(HANG FROM 2" VACUUM BREAKER VALVE)

- KEYED NOTES - 2" VACUUM BREAKER WITH 1" AIR RELEASE VALVE

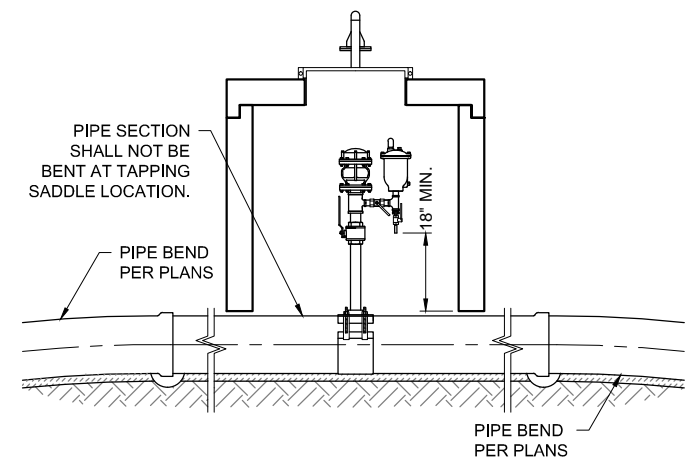
Item No.	Description
1	2" VALMATIC MODEL NO. 1852AVB.3XF VACUUM BREAKER VALVE W/ SCREENED HOOD, ANSI CLASS 250 FLANGE, 400 psi WP
2	1" VALMATIC MODEL NO. 38HP SV AIR RELEASE VALVE, 500 psi WP
3	14" x 2" OR 10" x 2" TAPPING SADDLE, D.I. W/ FUSION BONDED NYLON COATING, SS 304 DUAL STRAPS AND SS 304 BOLT KIT, FNPT, 350 psi WP, ROMAC 202 NS, OAE
4	2" BALL VALVE, STAINLESS STEEL, NPT, 1500 psi WP
5	4" FREEZE PREVENTION DRAFT DAMPENR. VALMATIC FROSTSAFE MODEL #1504, OAE
6	2" NIPPLE, SS 304, NPT
7	GALVANIZED PERFORATED METAL HANGER STRAP
8	1 5/8" GALVANIZED UNI-STRUT
9	2" ANCHOR BOLTS IN EPOXY
10	VENT PIPE W/ EMBEDDED 2" GALVANIZED IRON THREADED COUPLING ( PIPE EXTERIOR PAINTED BLUE )
11	2" STD. GALVANIZED IRON PIPE THREADED AT ONE END ( PIPE EXTERIOR PAINTED BLUE )
12	2" GALVANIZED IRON LONG RADIUS WELDED RETURN ( PIPE EXTERIOR PAINTED BLUE )
13	4" FLANGED x 2" WELDED GALVANIZED IRON REDUCER ( PIPE EXTERIOR PAINTED BLUE )
14	VARMINT SCREEN
15	1/2" DOWN SPOUT W/ SCREEN, SCHEDULE 80 PVC
16	2" FLANGE (THREADED), ANSI CLASS 300, SS 304, FLAT FACE
17	2" x 2" x 1" REDUCING TEE, SS 304, NPT, SCHEDULE 40
18	1" x 2" LENGTH NIPPLE, SS 304, NPT
19	1" BALL VALVE, SS 304, NPT, 2000 psi
20	1" TEE, SS 304, SCHEDULE 40
21	1" x 1/4" REDUCING BUSHING, SS 304, NPT
22	1/4" BALL VALVE, SS 304, NPT, 2000 psi
23	1/4" x 2" LENGTH NIPPLE, SS 304, NPT x PE
24	1/4" x CLOSE NIPPLE, SS 304, NPT
25	14" x 14" x 4" OR 10" x 10" x 4" MJ x MJ REDUCING TEE, D.I., 350 psi WP
26	4" x 2" TAPPED THREADED MJ PLUG, D.I., 350 psi, FBE COATED
27	4" GALVANIZED IRON COMPANION FLANGE, DRILLED/TAPPED TO FIT

NOTES:

1. ALL FLANGES SHALL BE FLAT FACED, UNLESS OTHERWISE NOTED.
2. ALL NON-STAINLESS METALLIC PIPE, VALVES AND FITTINGS SHALL BE FBE-COATED, INTERIOR AND EXTERIOR.
3. ALL NON-STAINLESS METALLIC PIPE IN CONTACT WITH SOIL SHALL ALSO BE COLD APPLIED TAPE-COATED PER AWWA C209.
4. VACUUM BREAKER VALVE TO BE LOCATED IN FIELD BY ENGINEER.
5. COIL TRACER WIRE ON INSIDE WALLS OF VAULT.
6. ALL STAINLESS STEEL PIPE AND FITTINGS SHALL BE STANDARD WALL.
7. REMOVE ALL PVC CUTTINGS FROM INSIDE MAIN LINE AFTER TAPPING.
8. CONTRACTOR SHALL ETCH ALL VACUUM BREAKER VAULT LIDS WITH 4" GRINDER AS FOLLOWS: PIPE STATION, VALVE SIZE, "ARV / VB", PIPE SIZE AND MATERIAL, WITH DIRECTIONAL ARROWS.
9. DO NOT TAP FUSIBLE OR RESTRAINED PIPE.
10. APPLY CATHODIC PROTECTION TO ALL BURIED NON-STAINLESS METALLIC COMPONENTS LOCATED WITHIN CORROSIVE SOIL ZONES, AS DESIGNATED IN THE PLANS AND/OR SPECIFICATIONS.
11. ALL MATERIALS RATED TO AT LEAST THE PIPE PRESSURE RATING UNLESS OTHERWISE NOTED.
12. PIPE SECTION SHALL NOT BE BENT AT VACUUM BREAKER INSTALLATION LOCATIONS, SEE DETAIL THIS SHEET.
13. ENSURE ALL BALL VALVE HANDLES ARE UNIMPEDED THROUGH THEIR FULL RANGE OF MOTION.

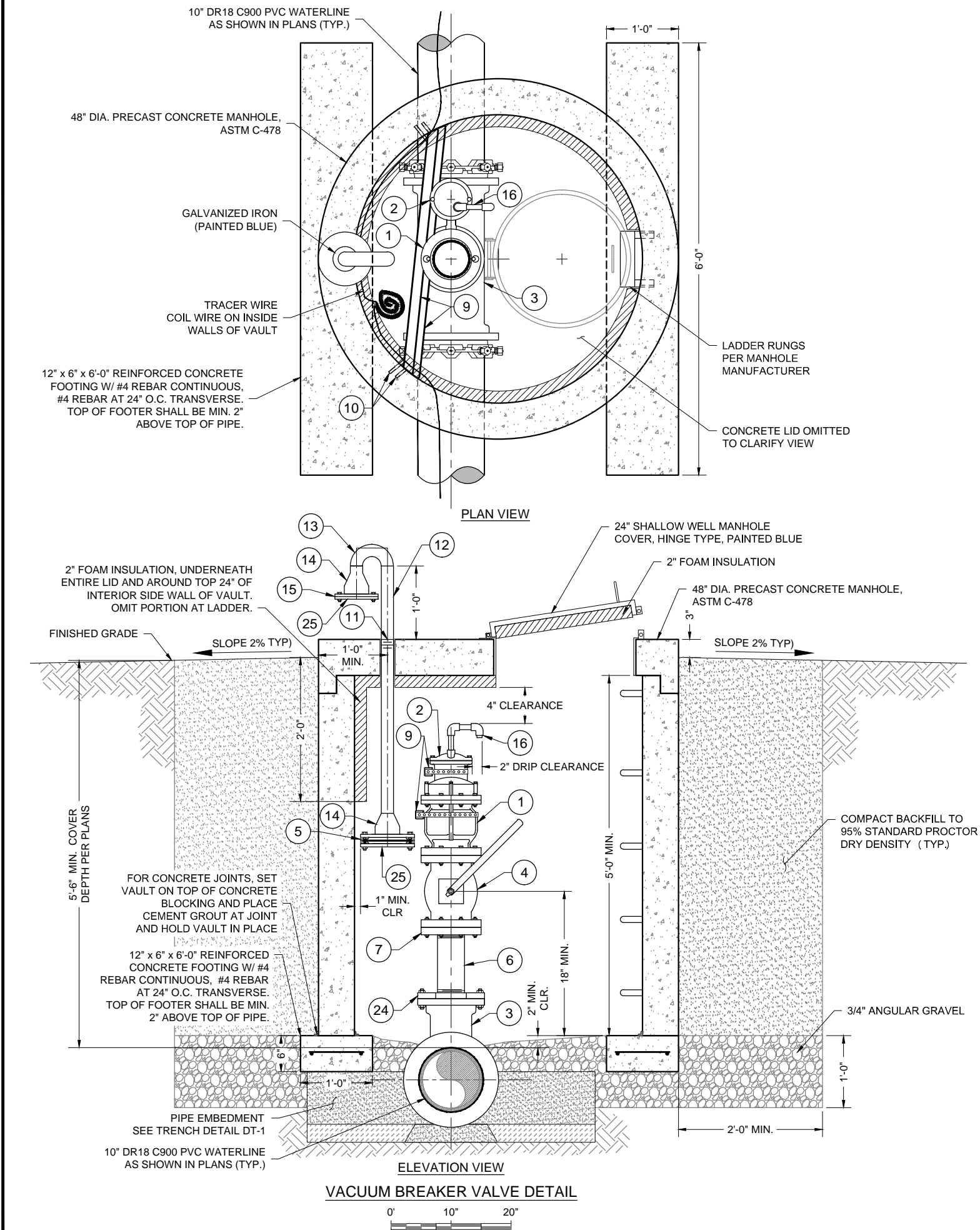


FRONT ELEVATION VIEW  
VACUUM BREAKER VALVE DETAIL  
N.T.S.



ELEVATION VIEW  
PIPE BENDING RESTRICTIONS FOR USE  
WITH TAPPING SADDLE  
N.T.S.



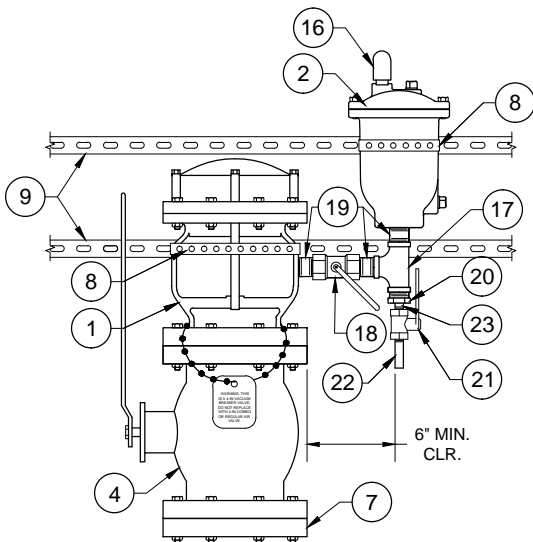


## KEYED NOTES - 4" VACUUM BREAKER WITH 1" AIR RELEASE VALVE

Item No.	Description
1	4" VALMATIC MODEL NO. 1804AVB.3XF VACUUM BREAKER VALVE W/ SCREENED HOOD, ANSI CLASS 125 FLANGE, 200 psi WP
2	1" VALMATIC MODEL NO. 38HP SV AIR RELEASE VALVE, 500 psi WP
3	10" x 10" x 6" MJ x MJ REDUCING TEE, D.I., FBE COATED 350 psi WP
4	4" FLANGED BALL VALVE, STAINLESS STEEL, 235 psi WP, 125/150 #FLANGE
5	4" FREEZE PREVENTION DRAFT DAMPENER. VALMATIC FROSTSAFE MODEL # 1504, OAE
6	4" NIPPLE, SS 304, NPT
7	4" FLANGE (THREADED), ANSI CLASS 150, SS 304, FLAT FACE
8	GALVANIZED PERFORATED METAL HANGER STRAP
9	1 5/8" GALVANIZED UNI-STRUT
10	2" ANCHOR BOLTS IN EPOXY
11	VENT PIPE W/ EMBEDDED 2" GALVANIZED IRON THREADED COUPLING (PIPE EXTERIOR PAINTED BLUE)
12	2" STD. GALVANIZED IRON PIPE THREADED AT ONE END (PIPE EXTERIOR PAINTED BLUE)
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	VARMINT SCREEN
16	1/2" DOWN SPOUT W/ SCREEN, SCHEDULE 80 PVC
17	1" TEE, SS 304, NPT, SCHEDULE 40
18	1" BALL VALVE, SS 304, NPT, 2000 psi
19	1" x 2" LENGTH NIPPLE, SS 304, NPT
20	1" x 1/4" REDUCING BUSHING, SS 304, NPT
21	1/4" BALL VALVE, SS 304, NPT, 2000 psi
22	1/4" x 2" LENGTH NIPPLE, SS 304, NPT x PE
23	1/4" x CLOSE NIPPLE, SS 304, NPT
24	6" x 4" TAPPED THREADED MJ PLUG, D.I., 350 psi, FBE COATED
25	4" GALVANIZED IRON COMPANION FLANGE, DRILLED/TAPPED TO FIT

### NOTES:

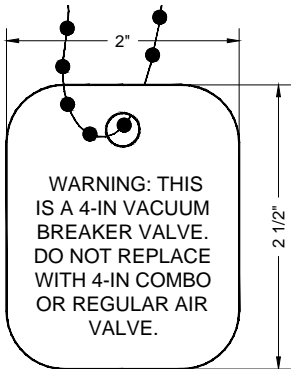
- ALL FLANGES SHALL BE FLAT FACED, UNLESS OTHERWISE NOTED.
- ALL NON-STAINLESS METALLIC PIPE, VALVES AND FITTINGS SHALL BE FBE-COATED, INTERIOR AND EXTERIOR. ALL NON-STAINLESS METALLIC PIPE IN CONTACT WITH SOIL SHALL ALSO BE COLD APPLIED TAPE-COATED PER AWWA C209.
- VACUUM BREAKER VALVE TO BE LOCATED IN FIELD BY ENGINEER.
- COIL TRACER WIRE ON INSIDE WALLS OF VAULT.
- ALL STAINLESS STEEL PIPE AND FITTINGS SHALL BE STANDARD WALL.
- CONTRACTOR SHALL ETCH ALL VACUUM BREAKER VAULT LIDS WITH 4" GRINDER AS FOLLOWS: PIPE STATION, VALVE SIZE, "ARV / VB", PIPE SIZE AND MATERIAL, WITH DIRECTIONAL ARROWS.
- APPLY CATHODIC PROTECTION TO ALL BURIED NON-STAINLESS METALLIC COMPONENTS LOCATED WITHIN CORROSIVE SOIL ZONES, AS DESIGNATED IN THE PLANS AND/OR SPECIFICATIONS.
- ALL MATERIALS RATED TO AT LEAST 235 psi UNLESS OTHERWISE NOTED.



FRONT ELEVATION VIEW

VACUUM BREAKER VALVE DETAIL

N.T.S.



VALVE WARNING TAG DETAIL

Client: The Navajo Nation	Location: Reach 24.1 JAN Turnout to JAN Border, NM	
4-INCH VACUUM BREAKER WITH 1-INCH AIR RELEASE VALVE DETAIL NAVAJO GALLUP WATER SUPPLY PROJECT - REACH 24.1 JAN SANDOVAL COUNTY, NEW MEXICO		
Designed AGR	Drawn AAV	Checked AGR
THIS DRAWING IS INCOMPLETE AND NOT TO BE USED FOR CONSTRUCTION UNLESS IT IS STAMPED, SIGNED AND DATED		
NOTICE OF EXTENDED PAYMENT PROVISION: THIS CONTRACT ALLOWS THE OWNER TO MAKE PAYMENT WITHIN 45 DAYS AFTER SUBMISSION OF AN UNDISPUTED REQUEST FOR PAYMENT.		
Date: October 24, 2016		
Scale: Horiz: AS SHOWN Vert: N/A		
Project No: 6921307		
Sheet: DT-8		

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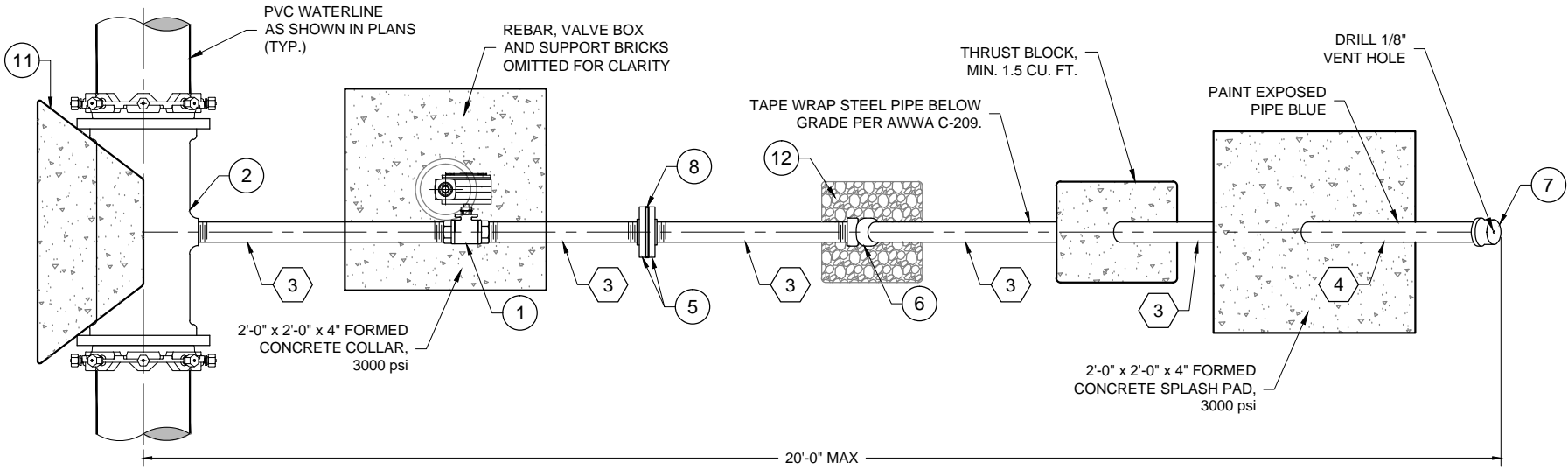




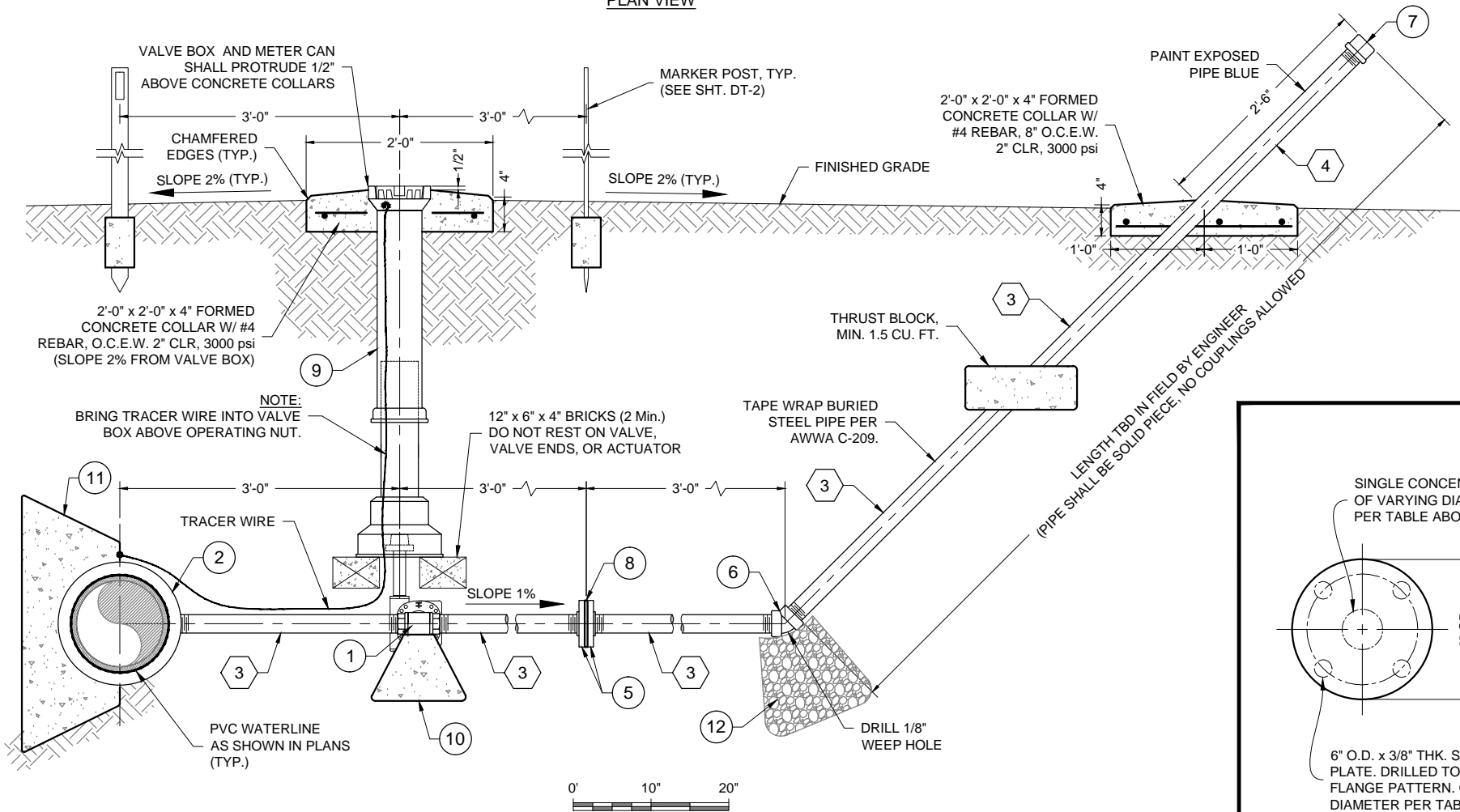
NOTE:  
CONCRETE SHALL BE SCRIBED  
PRIOR TO CURING OR ETCHED  
AFTER CURING WITH A 4" GRINDER.

### COLLAR SCRIBING DETAIL

NOT TO SCALE



PLAN VIEW



ELEVATION VIEW

### 2" FLUSH VALVE WITH ABOVE-GRADE DISCHARGE DETAIL

### KEYED NOTES - 2" FLUSH VALVE WITH ABOVE GRADE DISCHARGE

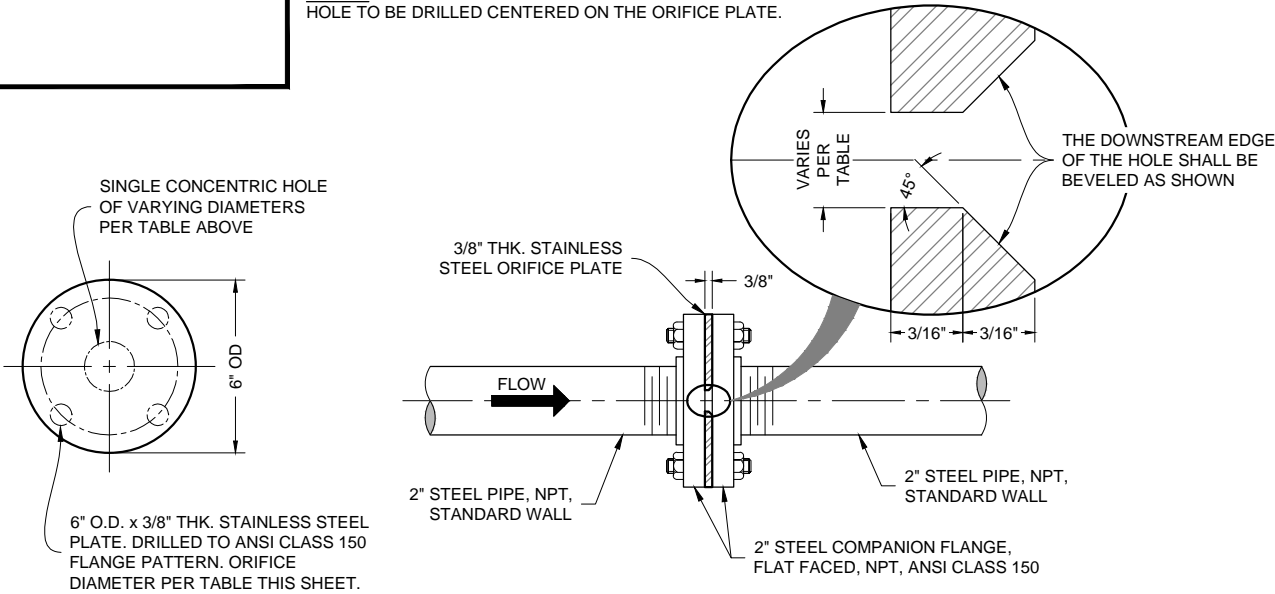
Item No.	DESCRIPTION
1	2" BALL VALVE, SS 304, STANDARD PORT, NPT, W/ AUMA WORM GEARBOX, 1500 psi
2	10" x 2" MJ TAPPED TEE, D.I., 350 psi
3	2" STEEL PIPE, STANDARD WALL, NPT, TAPE COATED BELOW GRADE
4	2" STEEL PIPE, STANDARD WALL, NPT, PAINTED BLUE ABOVE GRADE
5	2" STEEL-HUB, FLAT FACED, COMPANION FLANGE, NPT, SS 304, ANSI CLASS 150
6	2" STEEL 45° ELL, NPT, 300 psi
7	2" STEEL CAP, NPT, 300 psi, W/ 1/8" VENT HOLE
8	3/8" THK. STAINLESS STEEL ORIFICE PLATE, ANSI CLASS 150 DRILLING PATTERN (SEE TABLE THIS SHEET FOR ORIFICE SIZE)
9	VALVE BOX SLIP TYPE WITH NON LOCKABLE PLASTIC COVER
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.)

- NOTES:
- ALL FLANGES SHALL BE ANSI CLASS 150 (STEEL).
  - ALL NON STAINLESS METALLIC PIPE, VALVES 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 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 THIS SHEET FOR ORIFICE PLATE DRILLING.

### SUMMARY OF FLUSH VALVE ORIFICE PLATE DRILLING

Station	Elevation	Orifice Plate Hole Ø (in.)
46+84	6981	1.60
86+77	7001	1.45
149+50	6999	1.49

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



### ORIFICE PLATE ASSEMBLY

NOT TO SCALE

Client: The Navajo Nation Location: Reach 24.1 JAN Turnout to JAN Border, NM

2 INCH FLUSH VALVE WITH ABOVE-GRADE DISCHARGE DETAIL

NAVAJO GALLUP WATER SUPPLY PROJECT - REACH 24.1 JAN SANDOVAL COUNTY, NEW MEXICO

Designed: AGR

Drawn: AAV

Checked: AGR

ANDREW ROBERTSON

NEW MEXICO

15805

10/23/16

REGISTERED PROFESSIONAL ENGINEER

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

NOTICE OF EXTENDED PAYMENT PROVISION: THIS CONTRACT ALLOWS THE OWNER TO MAKE PAYMENT WITHIN 45 DAYS AFTER SUBMISSION OF AN UNDISPUTED REQUEST FOR PAYMENT.

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Know what's below. Call before you dig.

Date: October 24, 2016

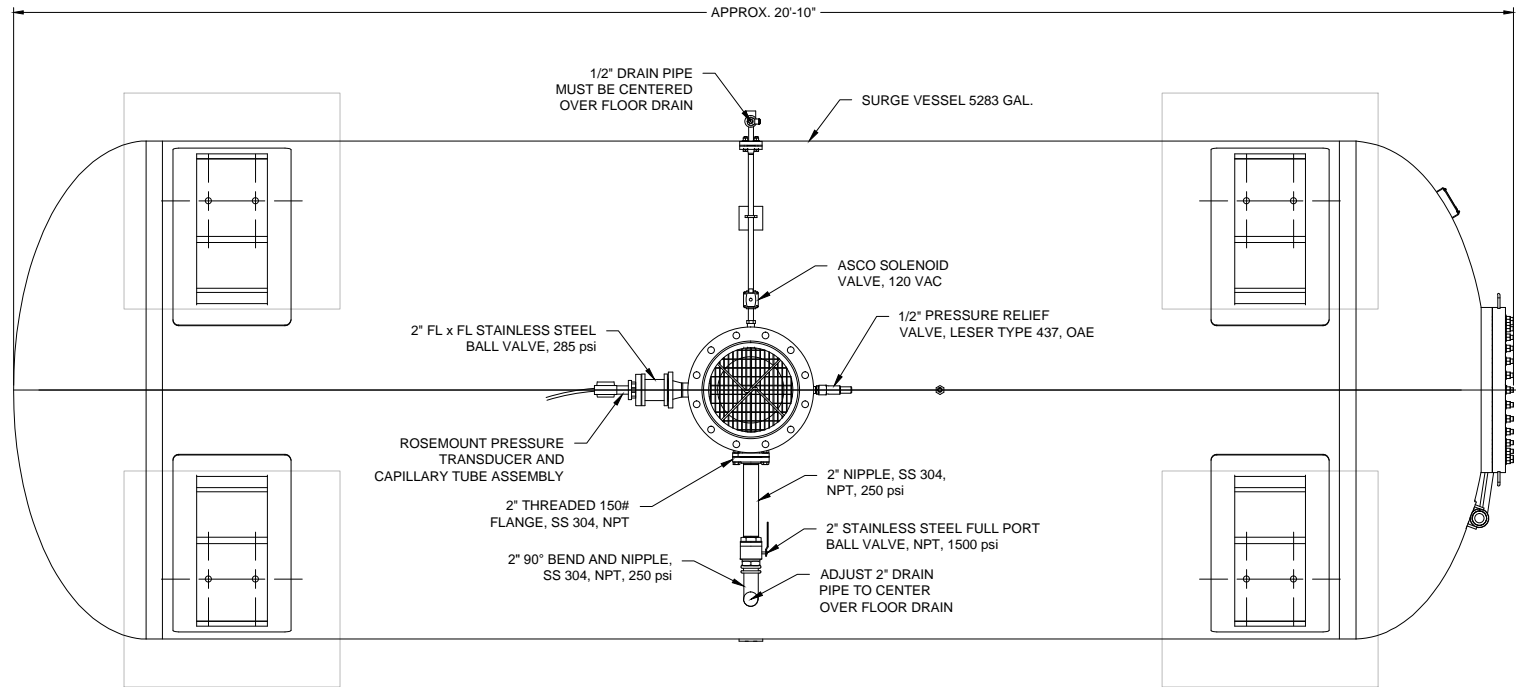
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Vert: N/A

Project No: 6921307

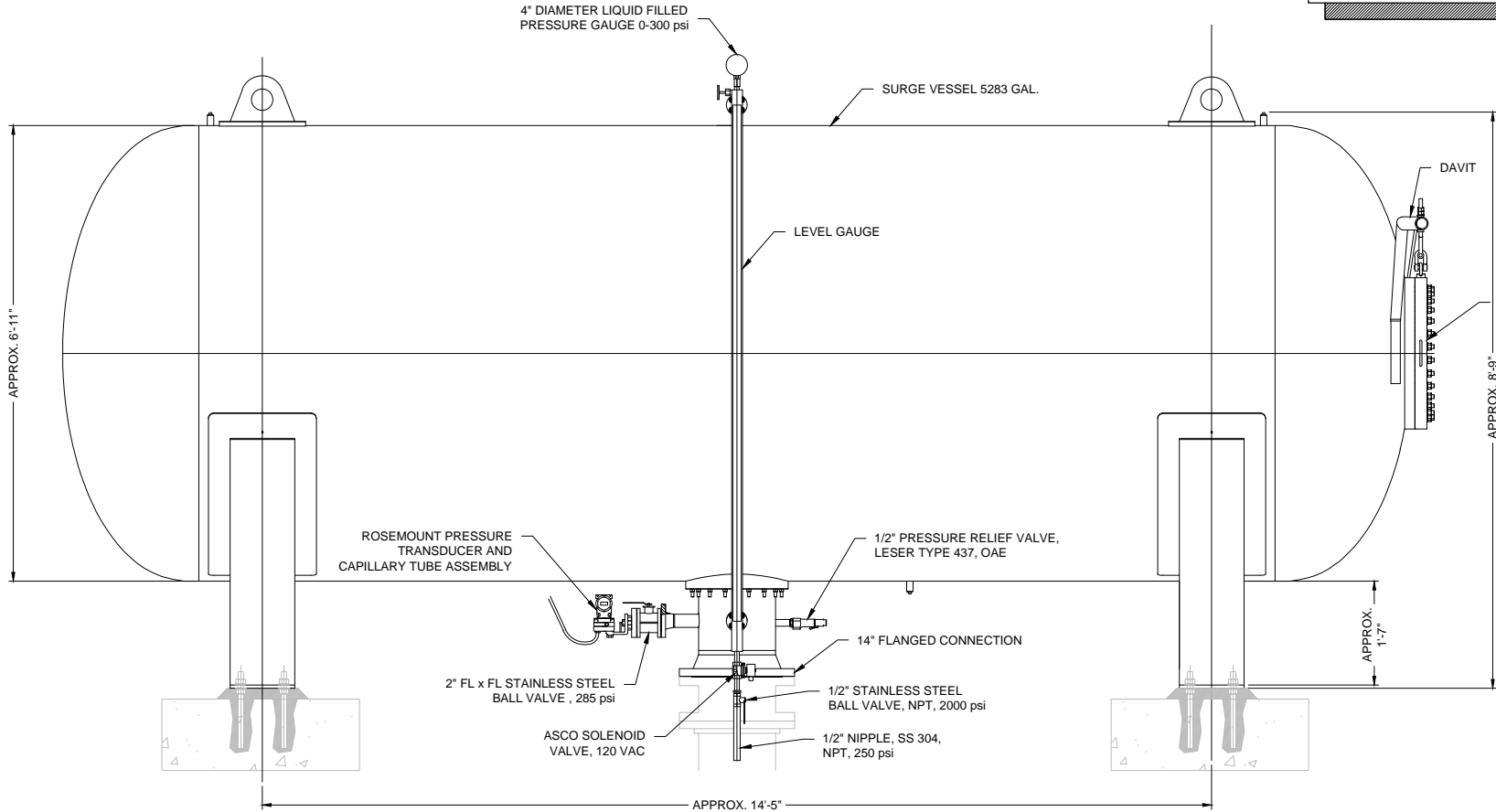
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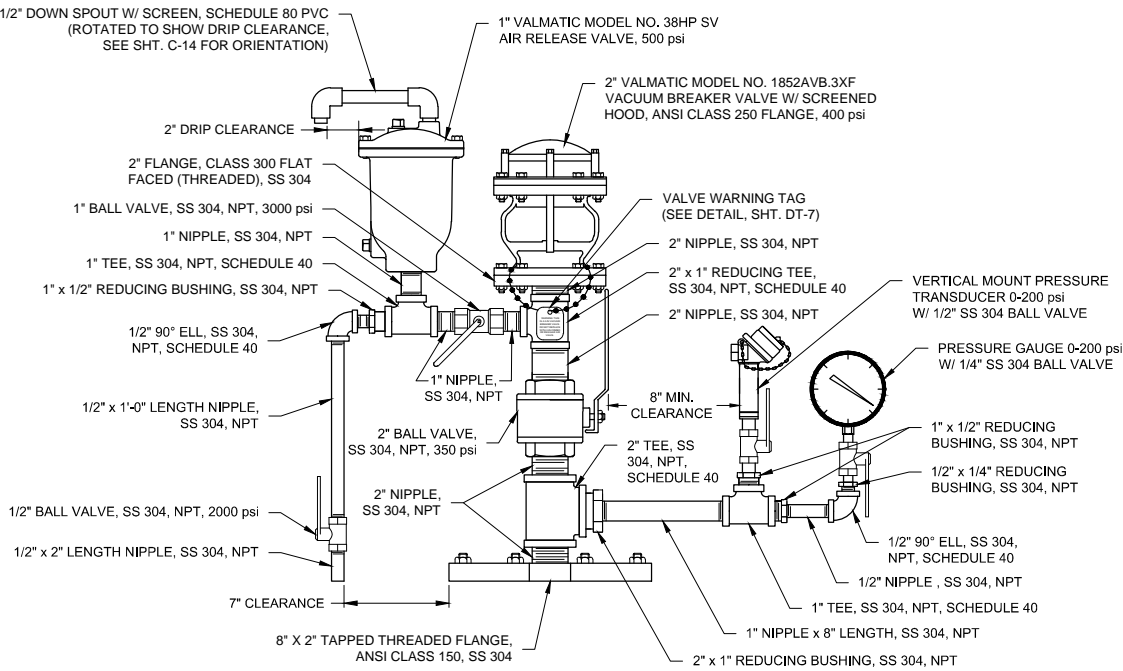
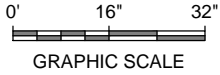


**UNDERSIDE VIEW OF SURGE TANK**  
3/8" = 1' - 0"

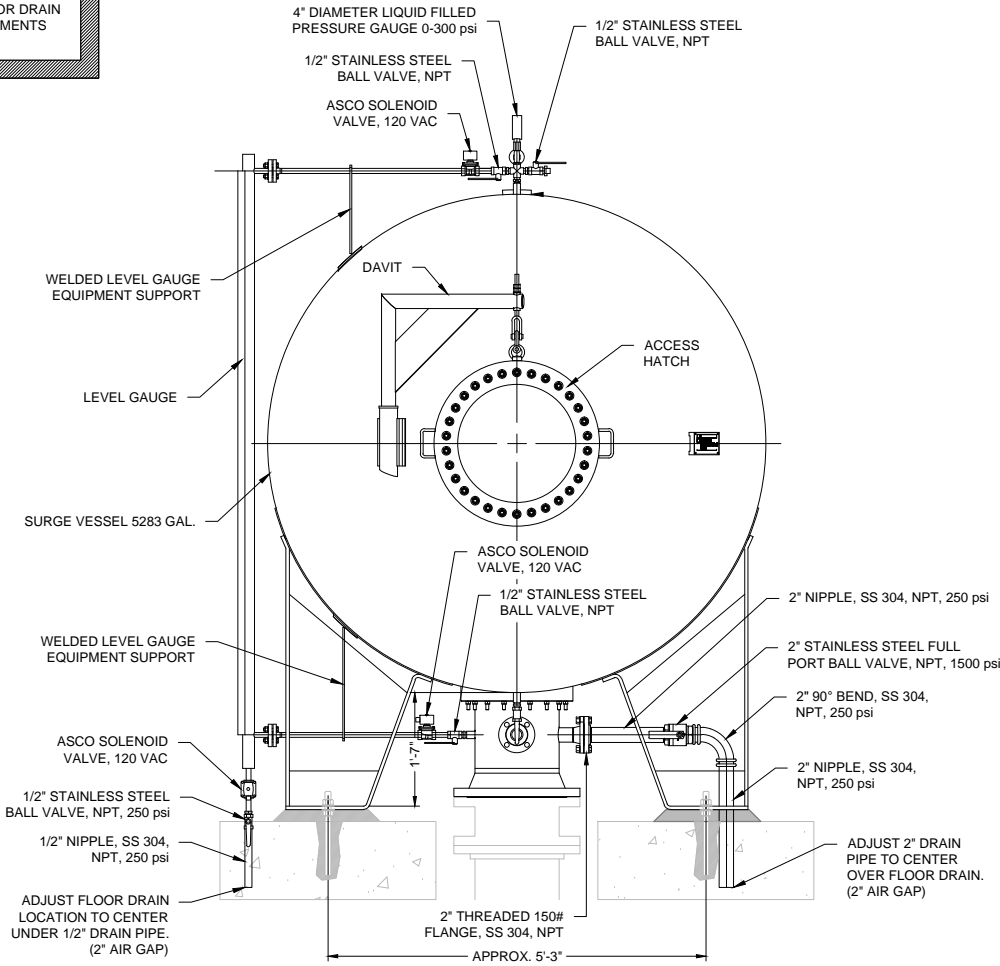
NOTE:  
ALL DIMENSIONS RELATED TO TANK SIZES, LEG SPACING, ETC. ARE APPROXIMATE, CONTRACTOR TO FIELD VERIFY ACTUAL TANK DIMENSIONS BEFORE FOUNDATION CONSTRUCTION OR DRAIN PIPE INSTALLATION. PROVIDE MEASUREMENTS TO ENGINEER AS SUBMITTAL.



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



**FRONT ELEVATION VIEW  
VACUUM RELIEF VALVE ASSEMBLY DETAIL**  
NOT TO SCALE



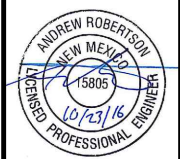
**END VIEW OF SURGE TANK**  
3/8" = 1' - 0"

Revision	Date	Description	By	Chk'd

**SMA** Soudier, Miller & Associates  
3451 CANDELARIA ROAD, SUITE D  
ALBUQUERQUE, NM 87107  
Phone (505) 299-0942 Toll-Free (877) 299-0942 Fax (505) 295-3430  
www.soudiermiller.com  
Serving the Southwest & Rocky Mountains  
Albuquerque, Carlsbad, Hobbs, Farmington, Las Cruces, Roswell, Santa Fe, NM  
Cortez, Grand Junction, CO - Siltco, AZ - Moab, UT - El Paso, TX  
10/24/2016 1:11:56 PM AW

Client: The Navajo Nation Location: Reach 24.1 JAN Turnout to JAN Border, NM  
**REACH 24.1 SURGE TANK AND VACUUM BREAKER ASSEMBLY DETAILS**  
NAVAJO GALLUP WATER SUPPLY  
PROJECT - REACH 24.1  
SANDOVAL COUNTY, NEW MEXICO

Designed	Drawn	Checked
AGR	AAV	AGR



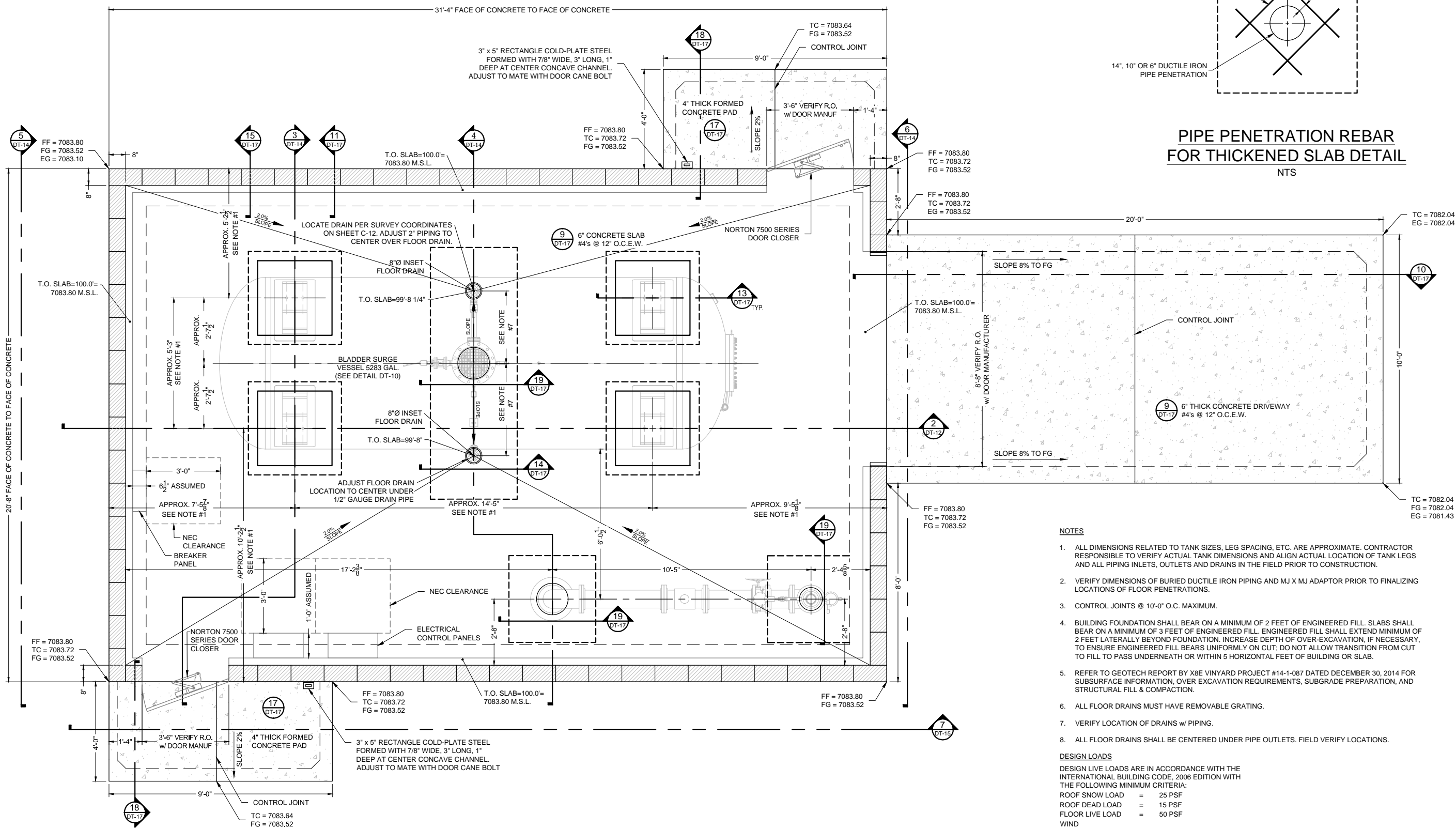
THIS DRAWING IS INCOMPLETE AND NOT TO BE USED FOR CONSTRUCTION UNLESS IT IS STAMPED, SIGNED AND DATED

NOTICE OF EXTENDED PAYMENT PROVISION:  
THIS CONTRACT ALLOWS THE OWNER TO MAKE PAYMENT WITHIN 45 DAYS AFTER SUBMISSION OF AN UNDISPUTED REQUEST FOR PAYMENT.



Date:	October 24, 2016
Scale:	Horiz: AS SHOWN Vert: N/A
Project No:	6921307
Sheet:	DT-10





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

0' 2' 4'

GRAPHIC SCALE

Revision	Date	Description	By	Chk'd

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Client: The Navajo Nation Location: Reach 24.1 JAN Turnout to JAN Border, NM  
**REACH 24.1 SURGE TANK BUILDING**  
**FOUNDATION PLAN**  
**NAVAJO GALLUP WATER SUPPLY**  
**PROJECT - REACH 24.1**  
**SANDOVAL COUNTY, NEW MEXICO**

Designed	Drawn	Checked
GYQ	AAV	AGR

**GRETA Y. QUINTANA**  
NEW MEXICO  
13561  
PROFESSIONAL ENGINEER  
10/24/16

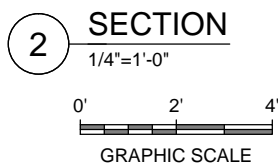
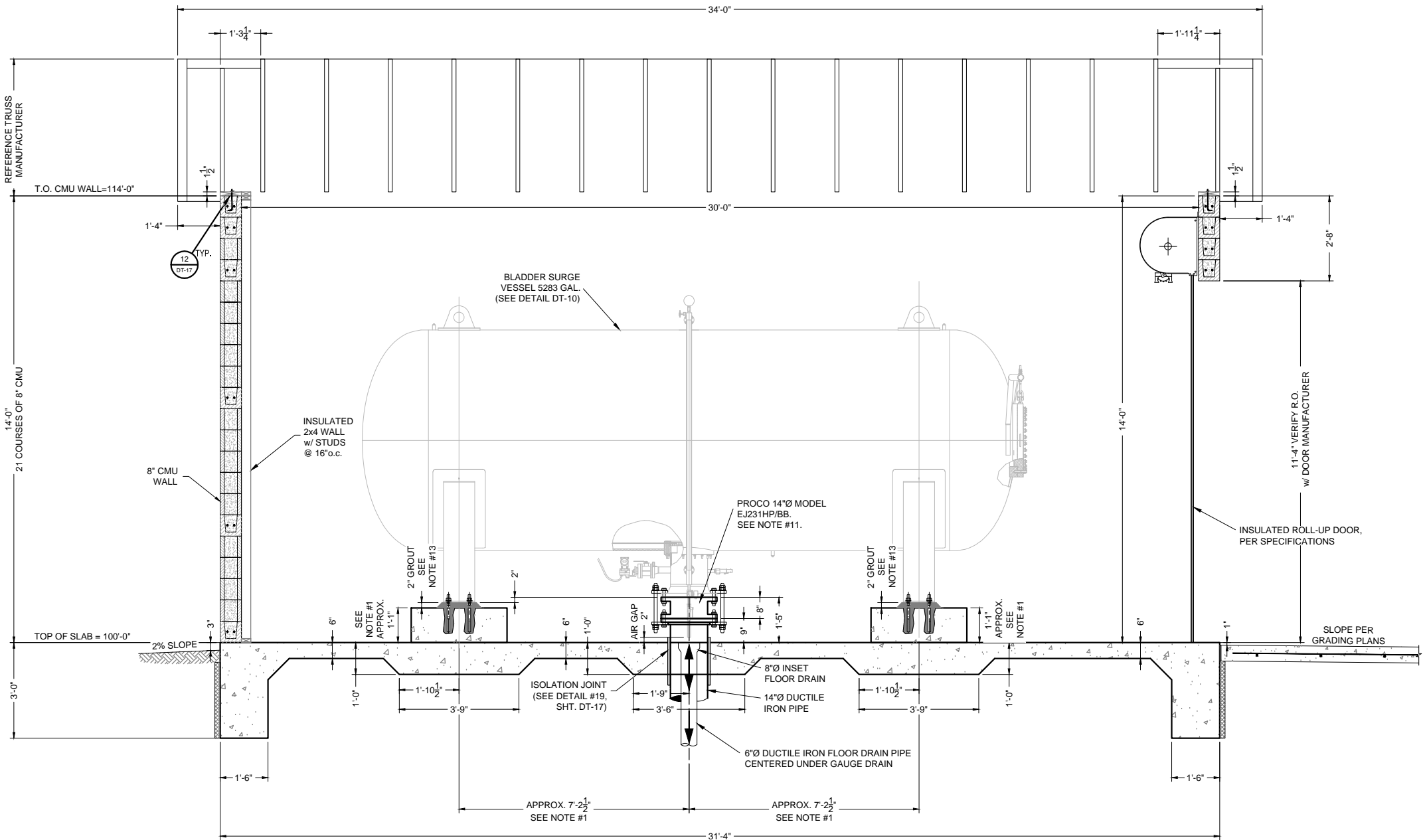
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Project No: 6921307  
Sheet: DT-11





#### 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.
- REFERENCE DETAILS DT-17 FOR ALL ARCHITECTURAL DETAILING NOT SHOWN HERE.
- FOR CONTINUATION OF SURGE TANK UNDERGROUND PIPING SEE PUMP STATION PIPING PLAN SHEETS C-12 THRU C-14.
- ALL FLOOR DRAINS MUST HAVE REMOVABLE GRATING.
- ALL DUCTILE IRON PIPE SHALL BE 350 psi WP RATED AND SHALL BE ENCASED IN TWO LAYERS OF POLYETHYLENE, PER SPECIFICATIONS.
- ALL BURIED PIPING WITHIN 5 FEET OF BUILDING FOUNDATIONS SHALL BE PRESSURE TESTED PRIOR TO POURING FOUNDATIONS.
- BUILDING FOUNDATION SHALL BEAR ON A MINIMUM OF 2 FEET OF ENGINEERED FILL. SLABS SHALL BEAR ON A MINIMUM OF 3 FEET OF ENGINEERED FILL. ENGINEERED FILL SHALL EXTEND MINIMUM OF 2 FEET LATERALLY BEYOND FOUNDATION. 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 BUILDING OR SLAB.
- REFER TO GEOTECH REPORT BY X8E VINYARD PROJECT #14-1-087 DATED DECEMBER 30, 2014 FOR SUBSURFACE INFORMATION, OVER EXCAVATION REQUIREMENTS, SUBGRADE PREPARATION, AND STRUCTURAL FILL & COMPACTION.
- VERIFY LOCATION OF DRAIN W/ PIPING.
- ALL FLOOR DRAINS SHALL BE CENTERED UNDER PIPE OUTLETS. FIELD VERIFY LOCATIONS & TOP OF SLAB.
- PROCO JOINT COMPRESSION SHALL BE WITHIN MFR'S RECOMMENDED TOLERANCES. DO NOT ALLOW BOLTS TO MAKE CONTACT WITH RUBBER JOINT. FIELD VERIFY CONTROL BOLT LENGTHS BEFORE FOUNDATION CONSTRUCTION.
- INSTALL TEMPORARY 14-INCH ANSI CLASS 125 BLIND FLANGE PRIOR TO FILLING AND FLUSHING PIPELINE. FLUSH LINE FROM STATION -0+39.10 TO STATION 46+84 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 14-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 -0+39.10 TO STATION 46+84 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.

Revision	Date	Description	By	Chk'd

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Client: The Navajo Nation Location: Reach 24.1 JAN Turnout to JAN Border, NM  
**REACH 24.1 SURGE TANK BUILDING**  
**SECTION (1 of 2)**  
**NAVAJO GALLUP WATER SUPPLY**  
**PROJECT - REACH 24.1**  
**SANDOVAL COUNTY, NEW MEXICO**

Designed GYQ	Drawn AAV	Checked AGR
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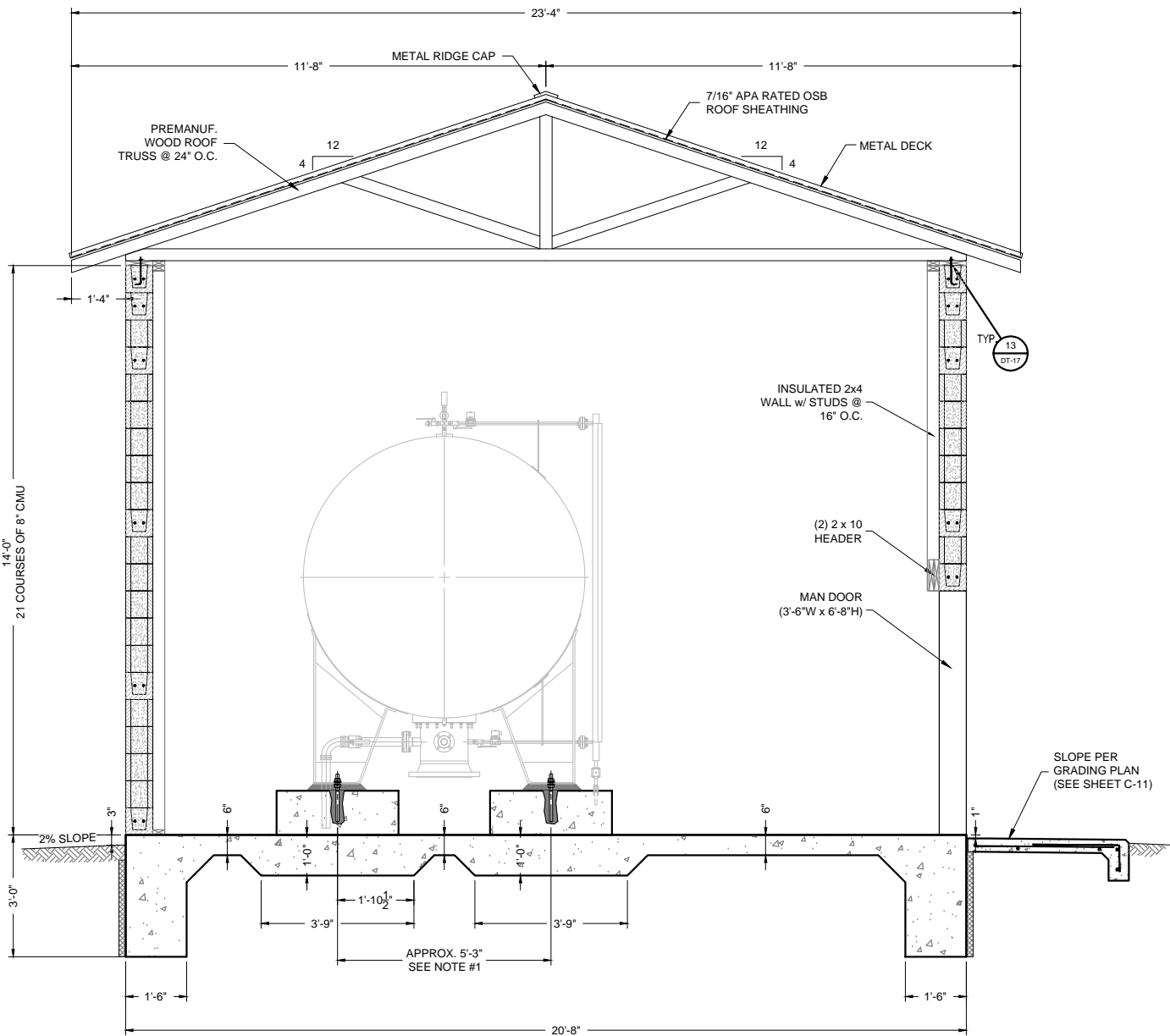
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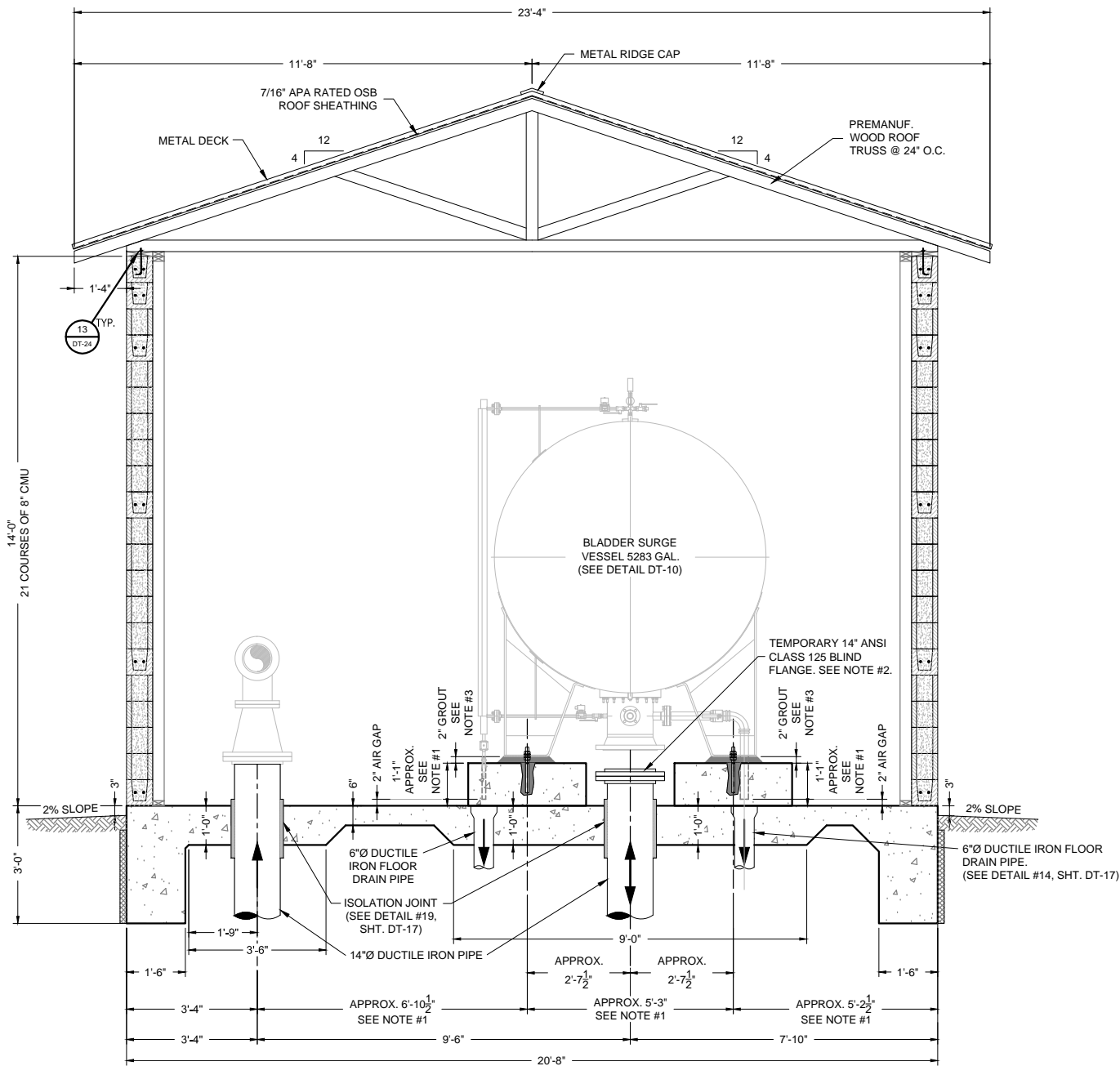
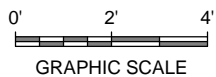


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Project No:	6921307
Sheet:	DT-12

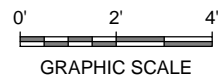




3 SECTION  
1/4"=1'-0"



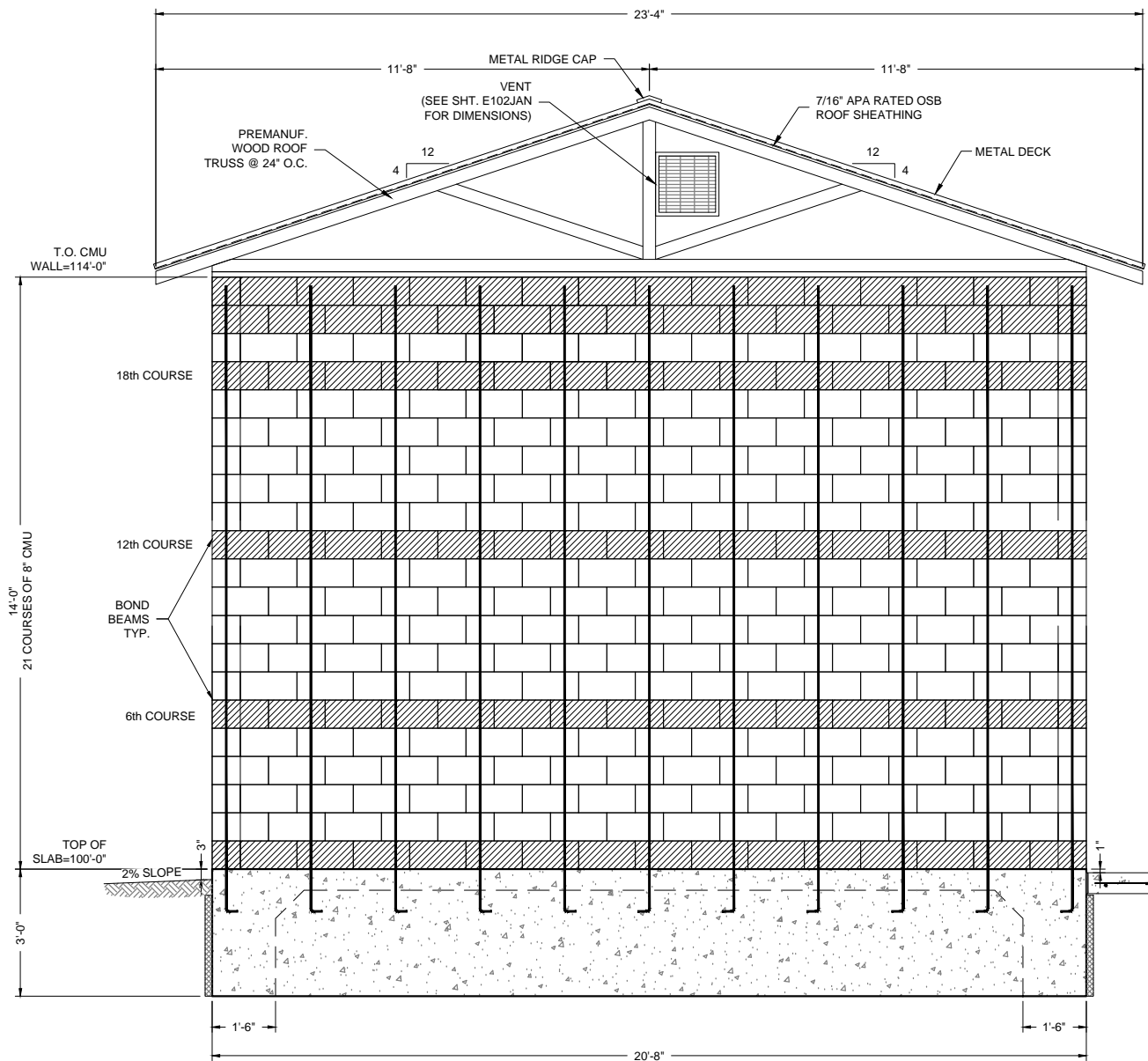
4 SECTION  
1/4"=1'-0"



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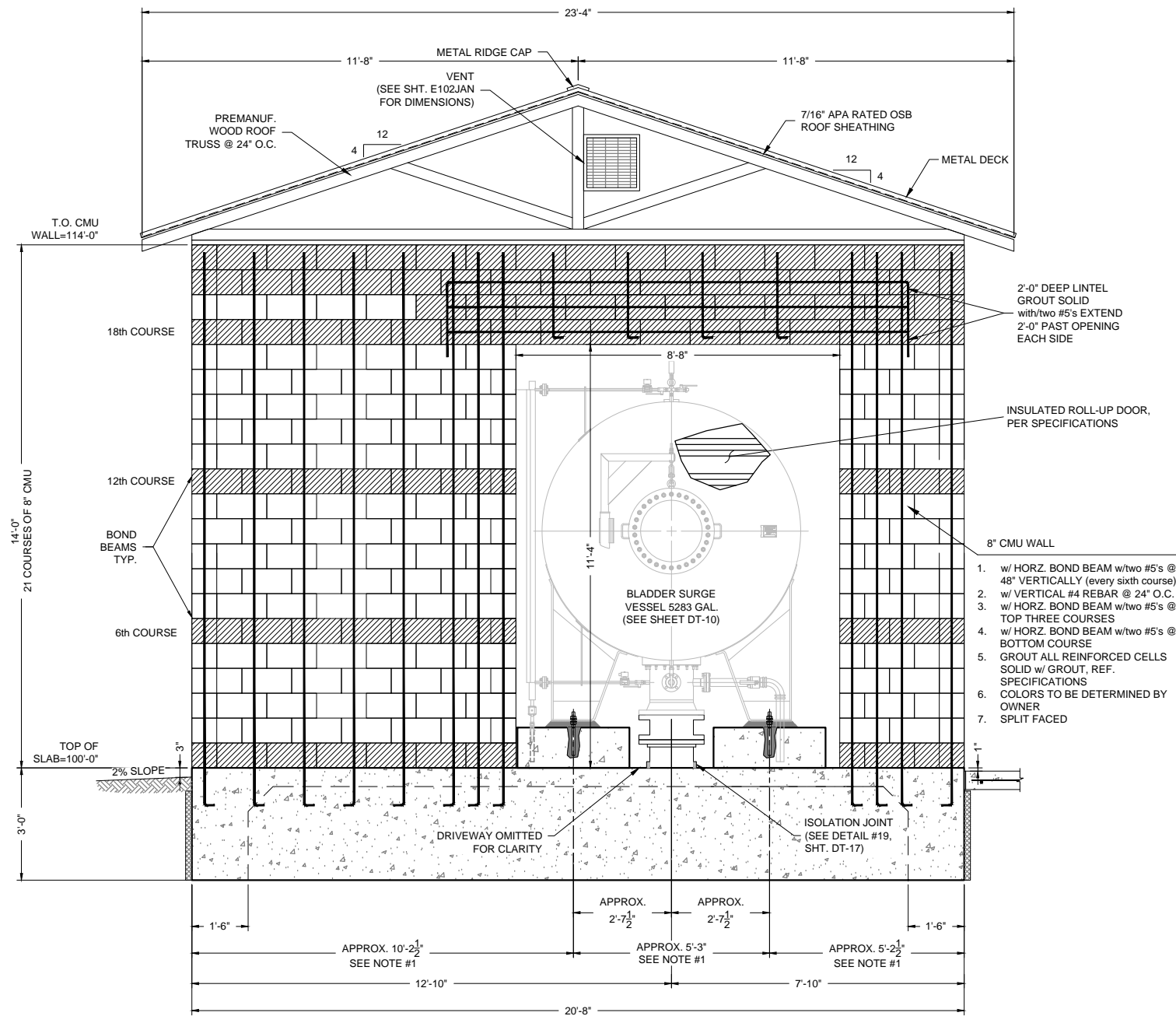




**5 END VIEW**  
1/4"=1'-0"

0' 2' 4'

GRAPHIC SCALE



**6 END VIEW**  
1/4"=1'-0"

0' 2' 4'

GRAPHIC SCALE

#### NOTES

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- FOR CONTINUATION OF SURGE TANK UNDERGROUND PIPING SEE SURGE TANK SITE PIPING PLAN, SHEETS C-12 & C-13.
- FOR BLOCK PATTERN DETAILS, SEE SHEET DT-18

#### LEGEND

BOND BEAM

Revision	Date	Description	By	Chk'd

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Client: The Navajo Nation Location: Reach 24.1 JAN Turnout to JAN Border, NM  
**REACH 24.1 SURGE TANK BUILDING**  
**END VIEW**  
**NAVAJO GALLUP WATER SUPPLY**  
**PROJECT - REACH 24.1**  
**SANDOVAL COUNTY, NEW MEXICO**

Designed GYQ Drawn AAV Checked AGR



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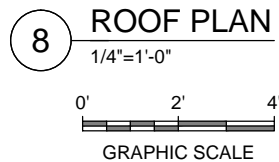


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Project No: 6921307  
Sheet: DT-14











Revision	Date	Description	By	Chk'd

**Client:** The Navajo Nation    **Location:** Reach 24-1 JAN T turnout to JAN Border, NM

**Call:** Reach 24-1 JAN Support Team Being Details Any

**Project:** Reach 24-1 JAN Support Team Being Details Any

**Location:** Reach 24-1 JAN Support Team Being Details Any

**SMA**  
Sustainable Mining Associates

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**REACH 24.1 SURGE TANK BUILDING**

**DETAILS**

**NAVAJO GALLUP WATER SUPPLY**

**PROJECT - REACH 24-1**

**SANDOVAL COUNTY, NEW MEXICO**

<b>Designed</b> GYQ	<b>Drawn</b> AAV	<b>Checked</b> AGR
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**Date:** October 20, 2016

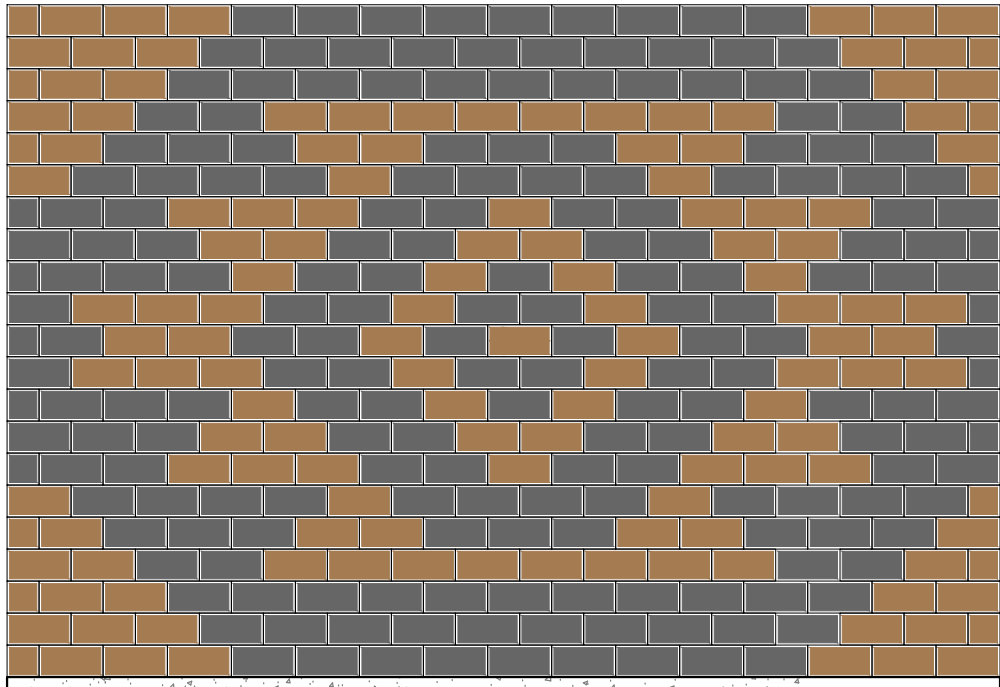
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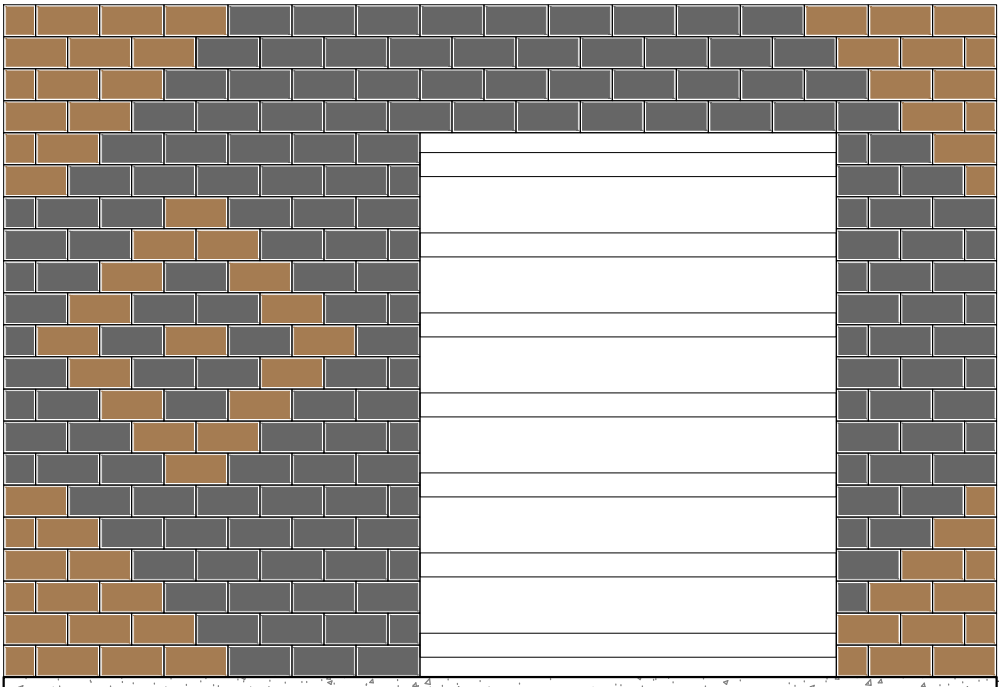
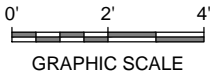
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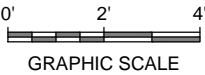




5 CMU BLOCK PATTERN END VIEW  
1/4"=1'-0"



6 CMU BLOCK PATTERN END VIEW  
1/4"=1'-0"



Client: The Navajo Nation Location: Reach 24.1 JAN Turnout to JAN Border, NM

REACH 24.1 SURGE TANK BUILDING  
BLOCK PATTERN DETAILS (1 of 2)  
NAVAJO GALLUP WATER SUPPLY  
PROJECT - REACH 24.1  
SANDOVAL COUNTY, NEW MEXICO

Designed  
AGR

Drawn  
AAV

Checked  
AGR

ANDREW ROBERTSON  
NEW MEXICO  
15805  
10/23/16  
LICENSED PROFESSIONAL ENGINEER

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811

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you dig.

Date: October 24, 2016

Scale: Horiz: AS SHOWN  
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Project No: 6921307

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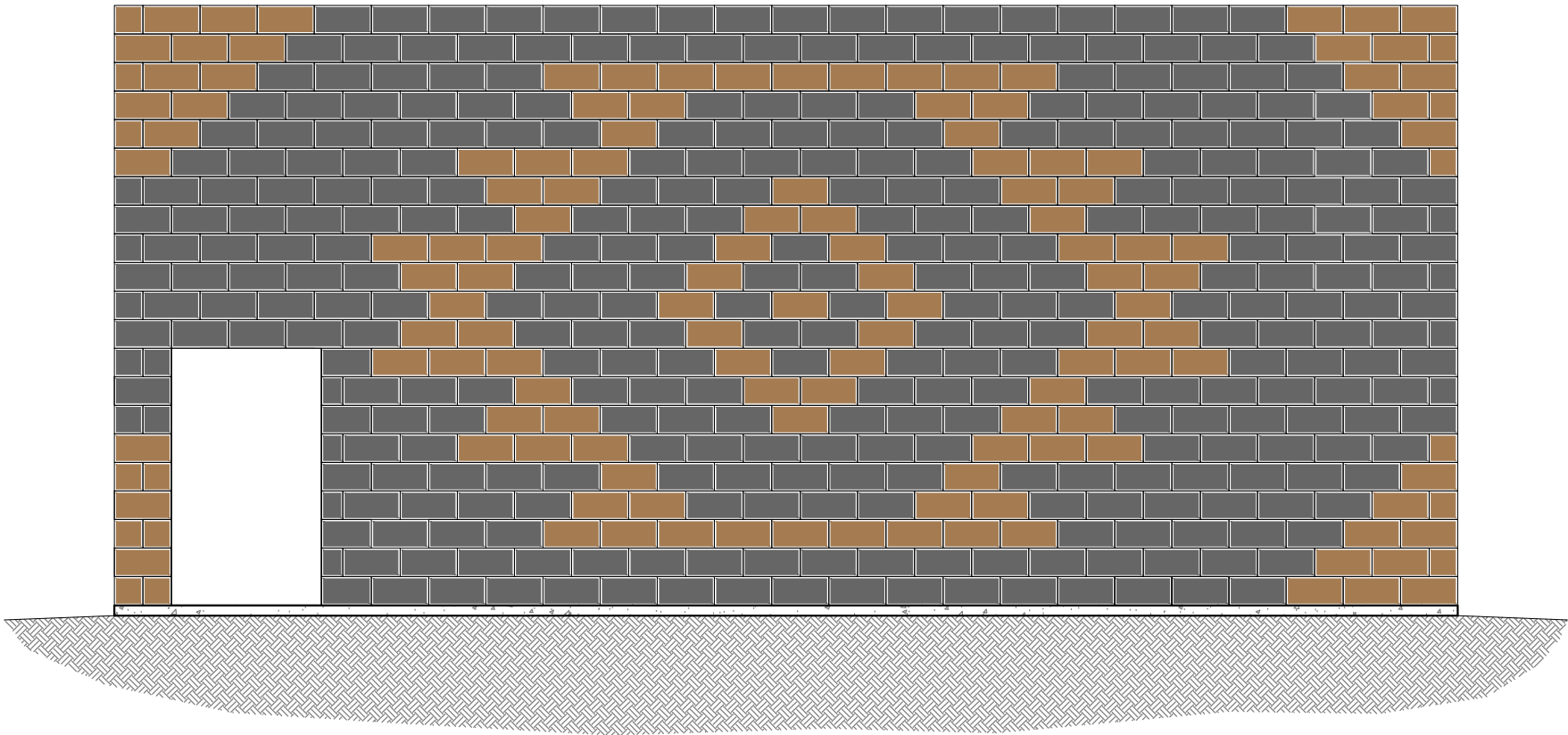
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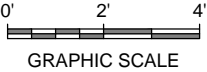
AW

Drawn Reach 24.1 JAN Surge Tank Block Details.dwg






7 CMU BLOCK PATTERN FRONT VIEW AND BACK VIEW  
1/4"=1'-0"



Revision	Date	Description	By	Chk'd
Drawn: Reach 24.1 JAN Surge Tank Block Details.dwg 10/24/2016 1:23:30 PM AW				



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Souder, Miller & Associates  
Engineers & Surveyors

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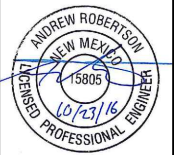
Client: The Navajo Nation Location: Reach 24.1 JAN Turnout to JAN Border, NM

REACH 24.1 SURGE TANK BUILDING  
BLOCK PATTERN DETAILS (2 of 2)  
NAVAJO GALLUP WATER SUPPLY  
PROJECT - REACH 24.1  
SANDOVAL COUNTY, NEW MEXICO

Designed  
AGR

Drawn  
AAV

Checked  
AGR



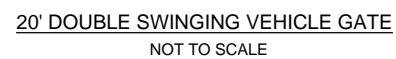
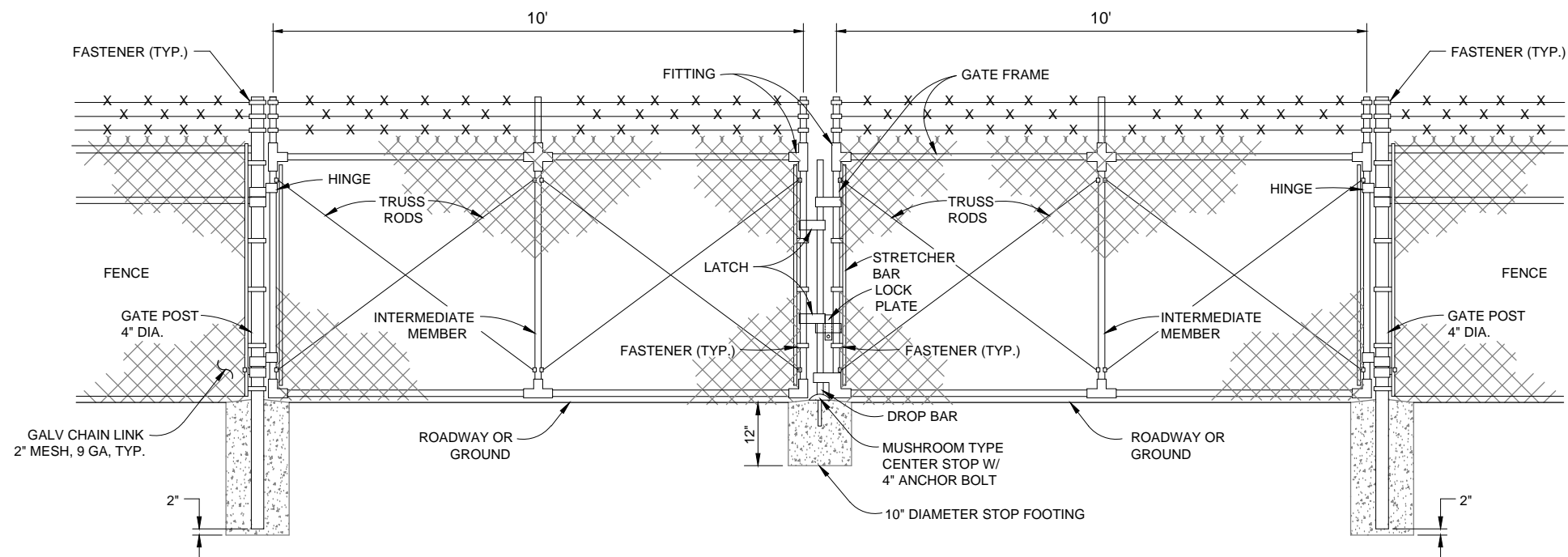
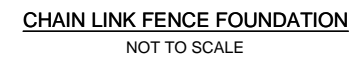
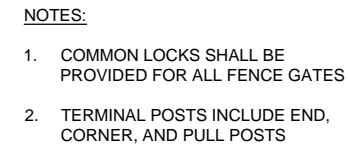
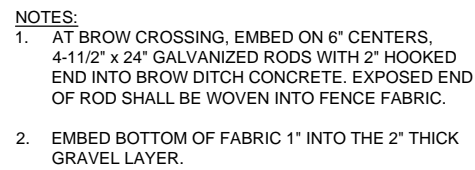
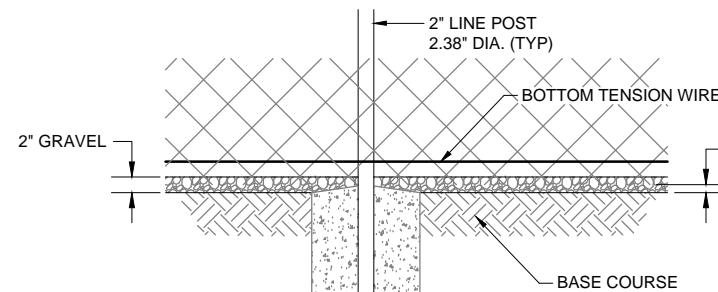
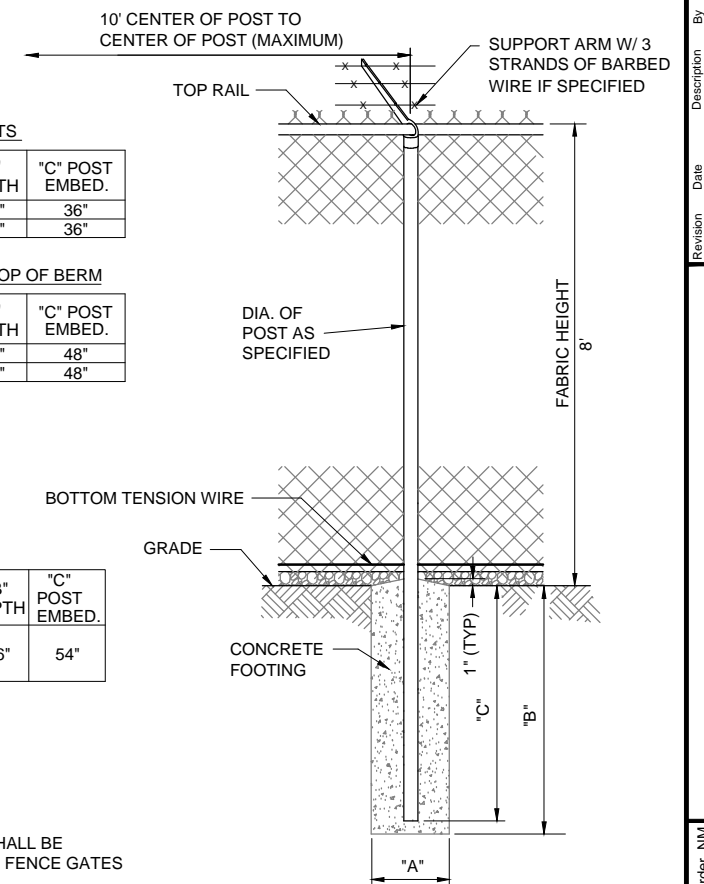
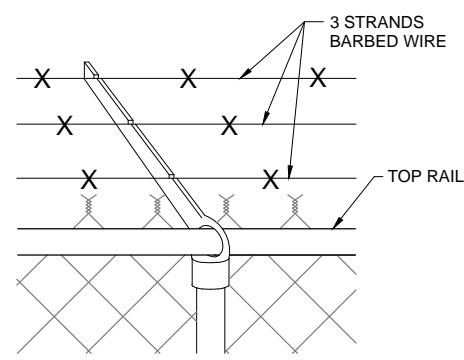
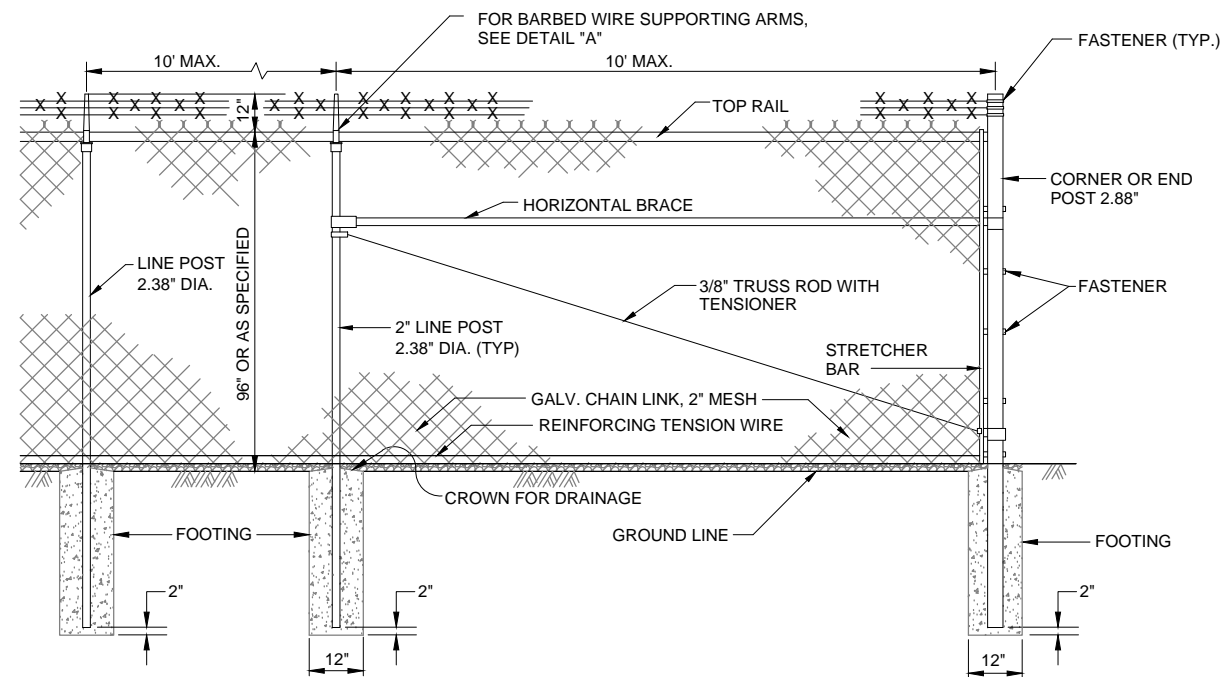
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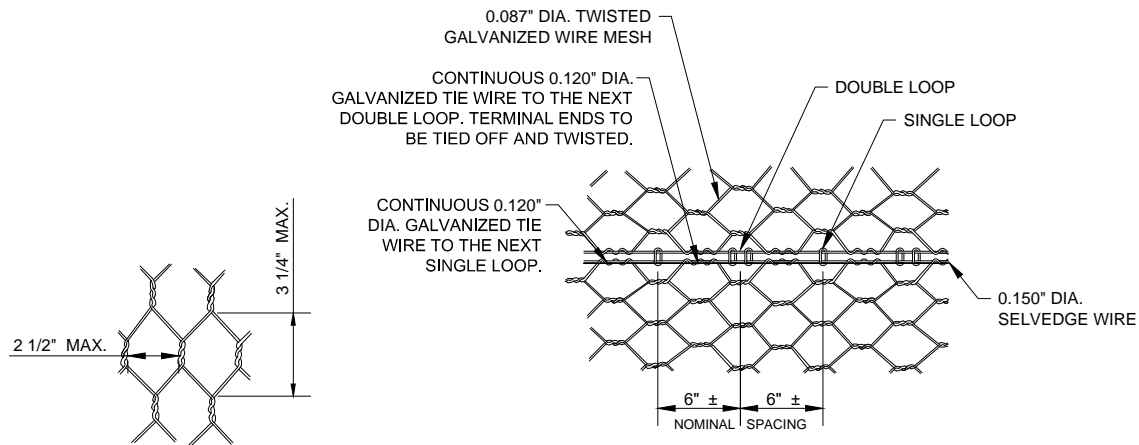


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Scale:	Horiz: AS SHOWN Vert: N/A
Project No:	6921307
Sheet:	DT-19

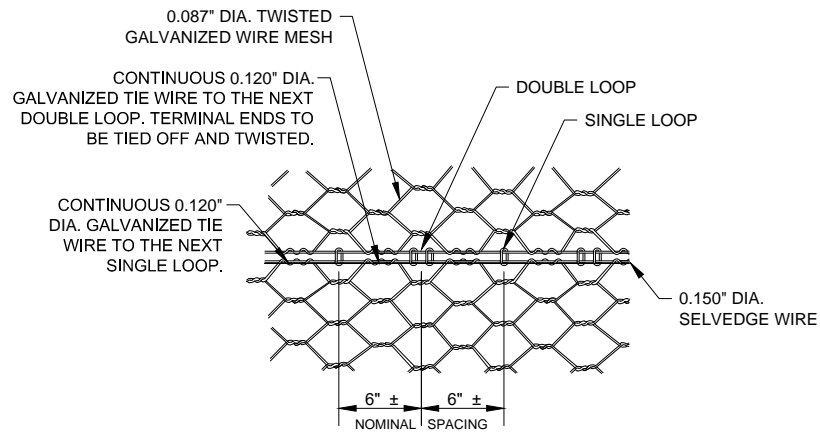




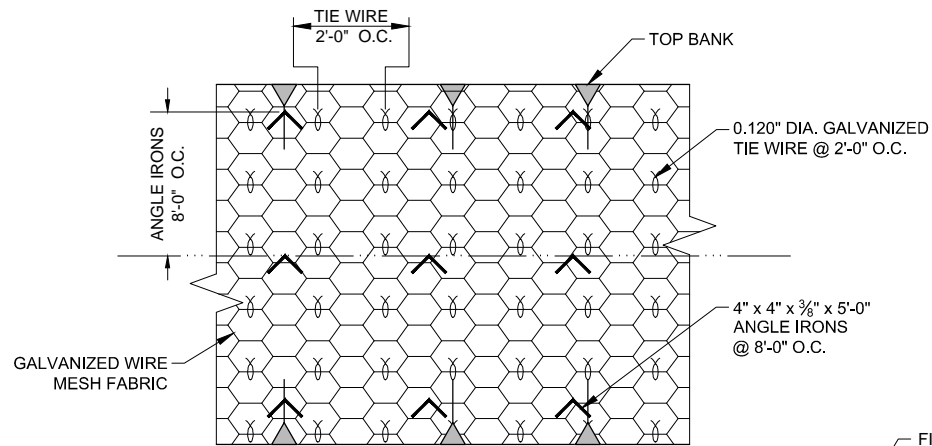




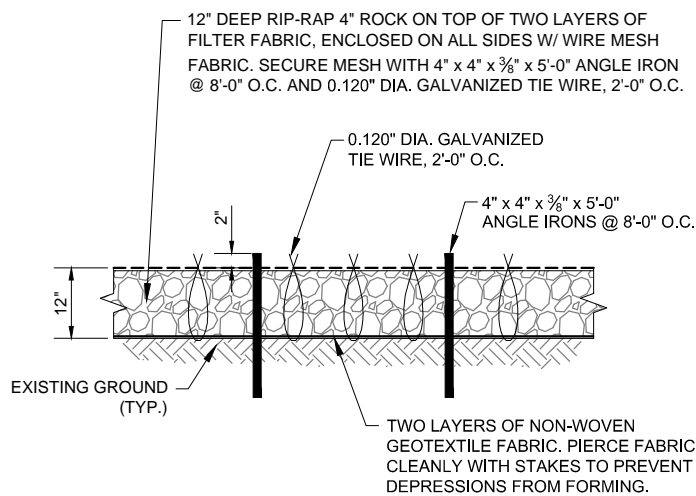
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NOT TO SCALE



**STANDARD JOINT CONNECTION DETAIL**  
NOT TO SCALE

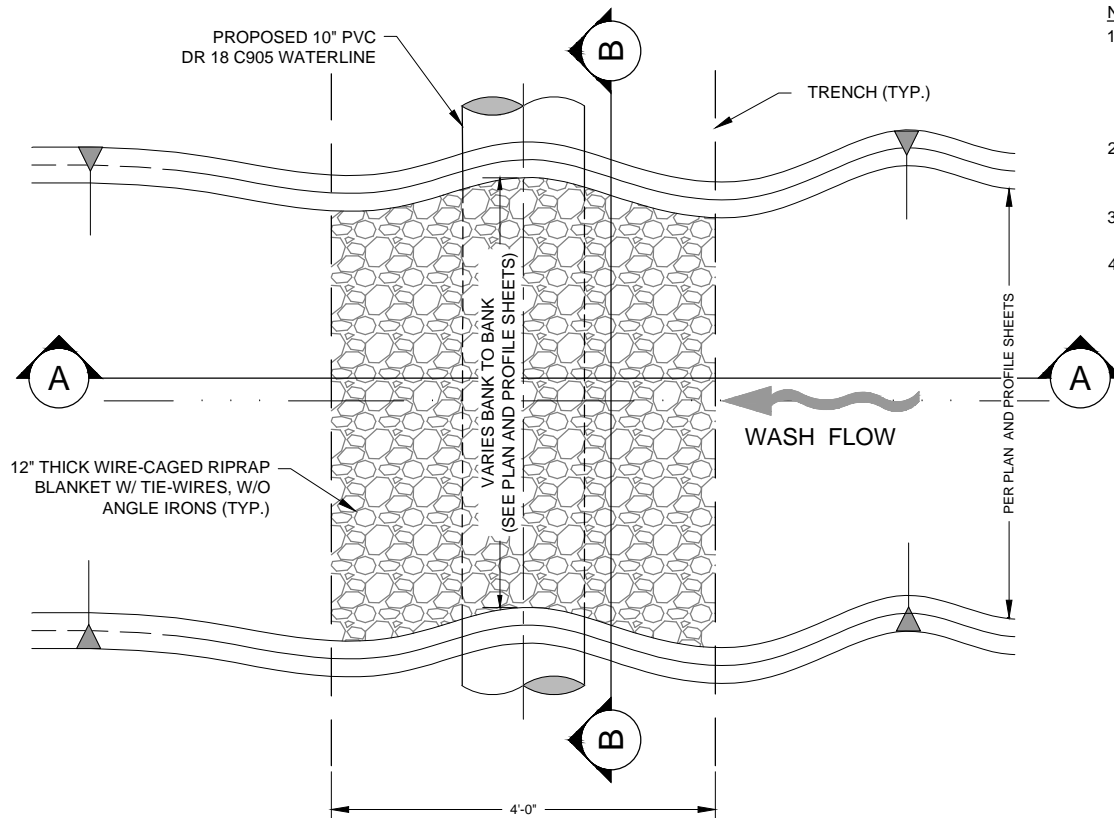


**TYP. 12" RIP-RAP CAGE & ANCHORING**  
NOT TO SCALE

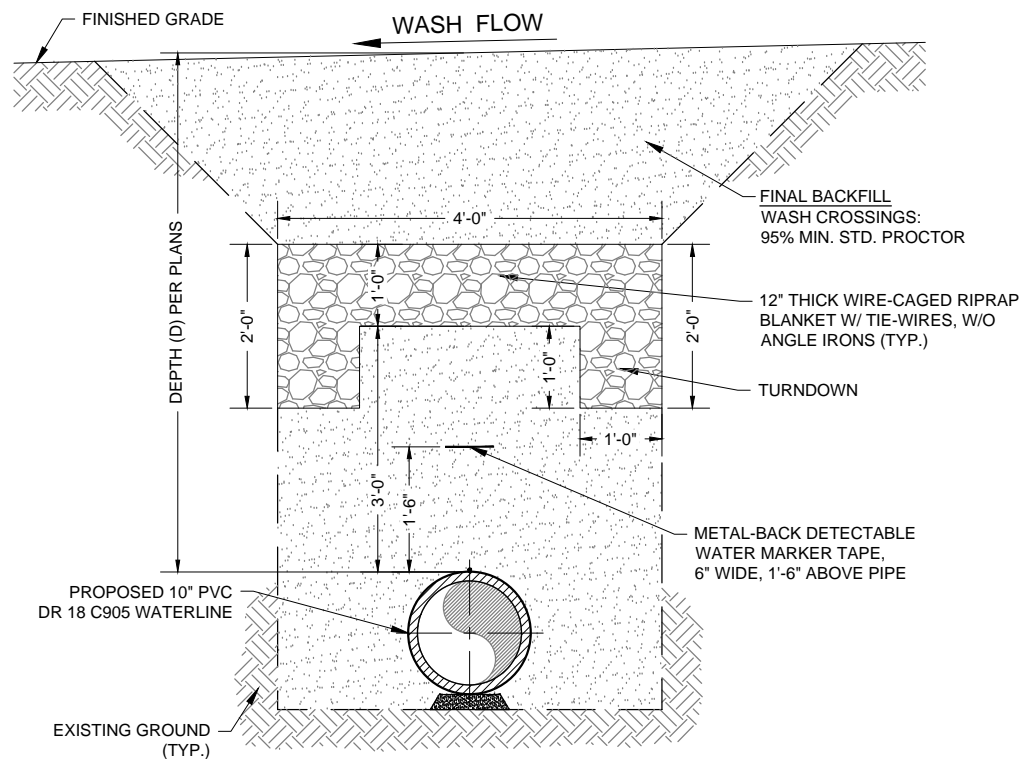


**CROSS SECTION**

**TYPICAL 12" RIP-RAP DETAIL**  
NOT TO SCALE

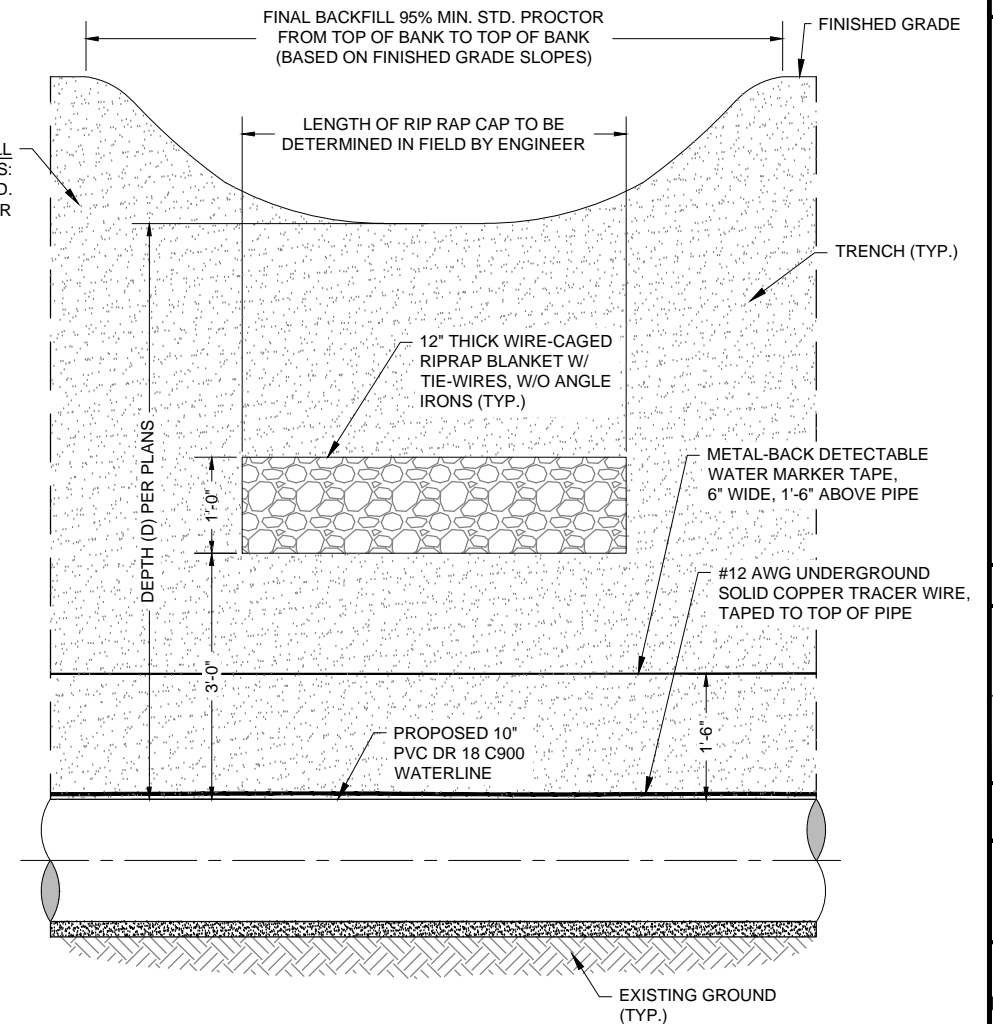


**PLAN VIEW**



**SECTION A-A**

**TYPICAL BURIED 12" RIPRAP MATTRESS FOR WASH CROSSINGS**  
NOT TO SCALE



**SECTION B-B**

**NOTE:**

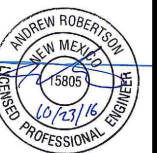
1. FOR RIPRAP BLANKETS IN NATURAL WATERWAYS (EXCEPT FLUSH VALVE OUTLETS), BLANKET SHALL BE BURIED AS SHOWN. COVER BLANKET WITH NATURAL SOIL AND REGRADE TO RESTORE WASH FLOWLINE TO NATURAL GRADE.
2. RIPRAP BLANKETS AT SITES, FLUSH VALVE OUTLETS AND CULVERT OUTLETS SHALL BE INSTALLED FLUSH WITH SURROUNDING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

Revision	Date	Description	By	Chk'd

**SMA**  
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Cortez, Grand Junction, CO, Siltco, AZ, Moab, UT, El Paso, TX  
10/24/2016 1:24:19 PM

Client: The Navajo Nation Location: Reach 24.1 JAN Turnout to JAN Border, NM  
**EROSION CONTROL DETAILS (1 of 3)**  
**NAVAJO GALLUP WATER SUPPLY**  
**PROJECT - REACH 24.1 JAN**  
**SANDOVAL COUNTY, NEW MEXICO**

Designed	Drawn	Checked
AGR	AAV	AGR



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**NOTICE OF EXTENDED PAYMENT PROVISION:**  
THIS CONTRACT ALLOWS THE OWNER TO MAKE PAYMENT WITHIN 45 DAYS AFTER SUBMISSION OF AN UNDISPUTED REQUEST FOR PAYMENT.



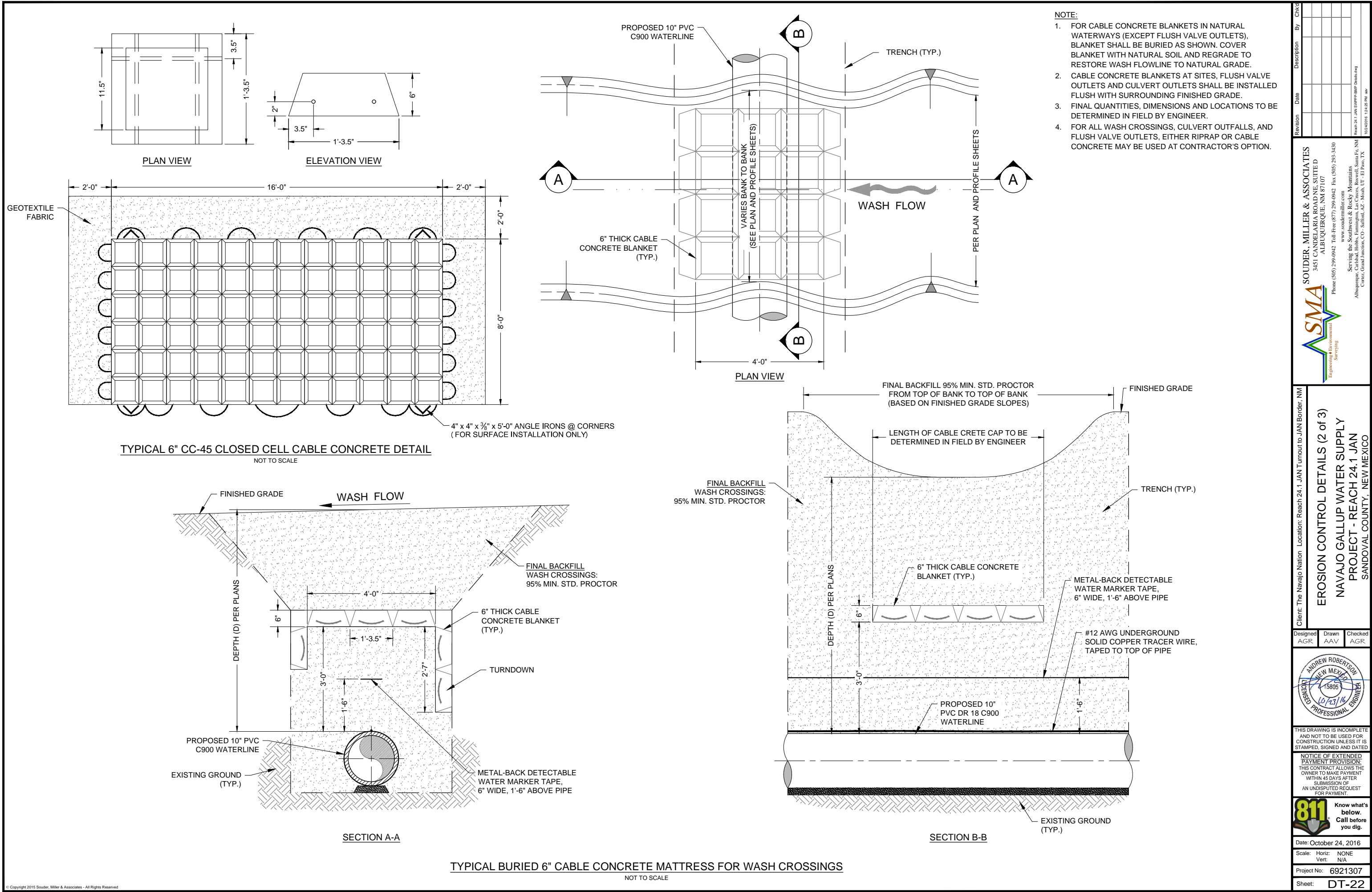
Date: October 24, 2016

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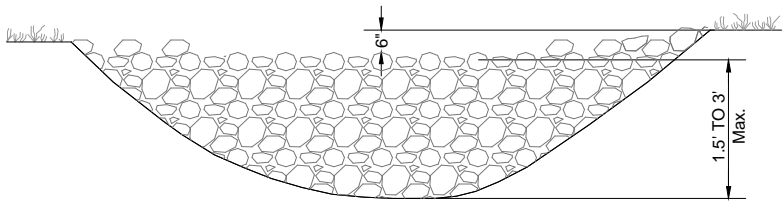
Project No: 6921307

Sheet: **DT-21**

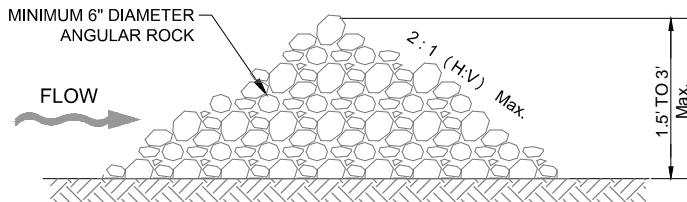




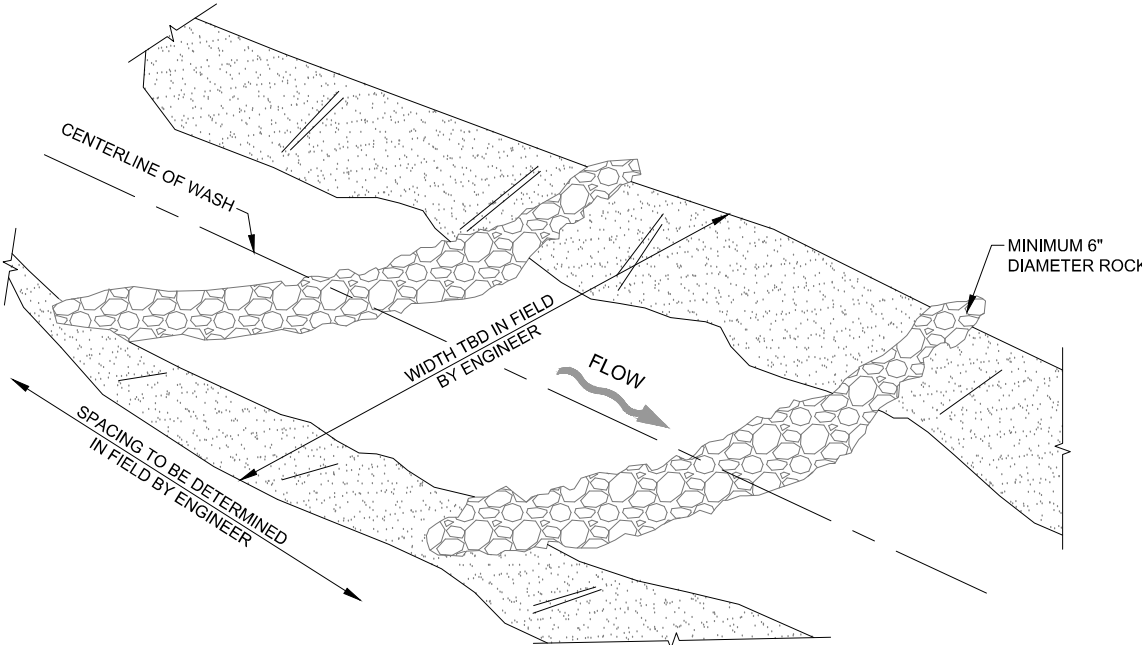




ELEVATION VIEW



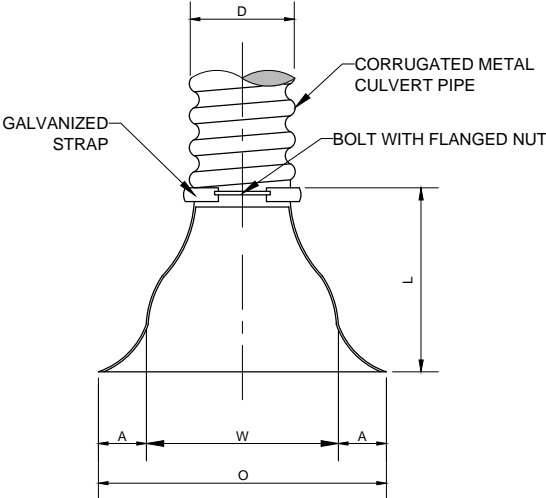
TYPICAL ROCK DAM SECTION



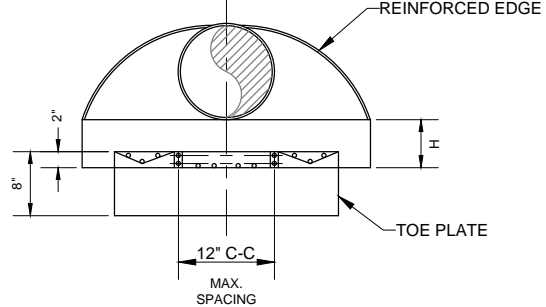
ISOMETRIC VIEW

ROCK CHECK DAM DETAIL  
NOT TO SCALE

END SECTIONS FOR ROUND PIPE						
D (Pipe Diameter) (Inches)	Culvert Length (Feet)	Pipe Gage	A (± 1") (Inches)	H (Min) (Inches)	L (± 2") (Inches)	W (± 2") (Inches)
24"	30'-0"	16	10"	6"	41"	48"
			O (Overall Width) (± 4") (Inches)			
			68"			

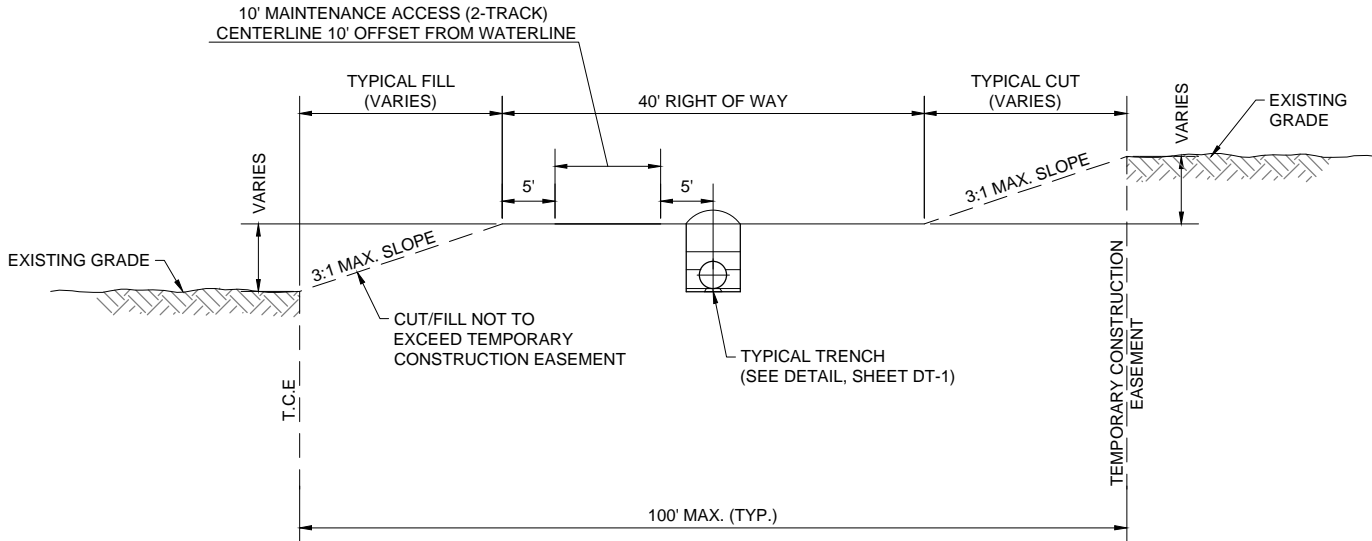


PLAN VIEW



ELEVATION VIEW

STANDARD END SECTION FOR  
CORRUGATED METAL CULVERT PIPE  
NOT TO SCALE



TYPICAL PIPELINE ROW FINISHED GRADING DETAIL  
NOT TO SCALE

- NOTES:
- ALL DISTURBED EARTH SHALL BE COMPACTED AND RESEEDED AS REQUIRED PER DT-1 AND SPECIFICATIONS.
  - TOTAL WIDTH IS REDUCED IN AREAS WHERE TEMPORARY CONSTRUCTION EASEMENT IS TRUNCATED DUE TO ADJACENT CULTURALLY SENSITIVE AREAS, ROADWAYS, PRIVATE PROPERTIES, ETC.
  - FINAL GRADING AND SLOPE STABILIZATION MUST BE APPROVED BY ENGINEER AND BLM.

NOTES:

- ALL 3 PIECE BODIES TO HAVE 12 GA. SIDES AND 10 GA. CENTER PANELS. WIDTH OF CENTER PANELS TO BE GREATER THAN 20% OF THE PIPE PERIPHERY. MULTIPLE PANEL BODIES TO HAVE LAP SEAMS WHICH ARE TO BE TIGHTLY JOINED BY ~6" GALVANIZED RIVETS OR BOLTS.
- WELDING WILL NOT BE PERMITTED IN CONNECTING END SECTIONS TO CONNECTOR SECTIONS OR CONNECTOR SECTIONS TO PIPE.
- TYPE 1 PIPE MAY BE USED WITH WELDED SEAM OR LOCKSEAM CONNECTED HELICALLY CORRUGATED PIPE WITH RE-ROLLED ENDS. RE-ROLLED ENDS SHALL INCLUDE A MINIMUM OF 2 ANNULAR CORRUGATIONS OF THE SAME SIZE AS THE PIPE CORRUGATIONS.
- INSTALL 4x 66" YELLOW CARSONITE UTILITY MARKERS WITH REFLECTORS, 2x AT EACH END, AT ALL CULVERT CROSSINGS OFFSET 12" FROM THE ROAD OR DRIVEWAY SURFACE.
- ALL FILL TO BE COMPACTED EARTH, 95% OF MAXIMUM DENSITY AS DETERMINED BY ASTM D1557.

Client: The Navajo Nation Location: Reach 24.1 JAN Turnout to JAN Border, NM

EROSION CONTROL DETAILS (3 of 3)  
AND R-O-W GRADING  
NAVAJO GALLUP WATER SUPPLY  
PROJECT - REACH 24.1 JAN  
SANDOVAL COUNTY, NEW MEXICO

Designed: AGR Drawn: AAV Checked: AGR

ANDREW ROBERTSON  
NEW MEXICO  
15805  
10/23/16  
REGISTERED PROFESSIONAL ENGINEER

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NOTICE OF EXTENDED  
PAYMENT PROVISION:  
THIS CONTRACT ALLOWS THE  
OWNER TO MAKE PAYMENT  
WITHIN 45 DAYS AFTER  
SUBMISSION OF  
AN UNDISPUTED REQUEST  
FOR PAYMENT.

811  
Know what's  
below.  
Call before  
you dig.

Date: October 24, 2016

Scale: Horiz: NONE  
Vert: N/A

Project No: 6921307

Sheet: DT-23

SMA  
Soudier, Miller & Associates  
Surveying  
Engineering & Construction

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Revision

Description

Date

By

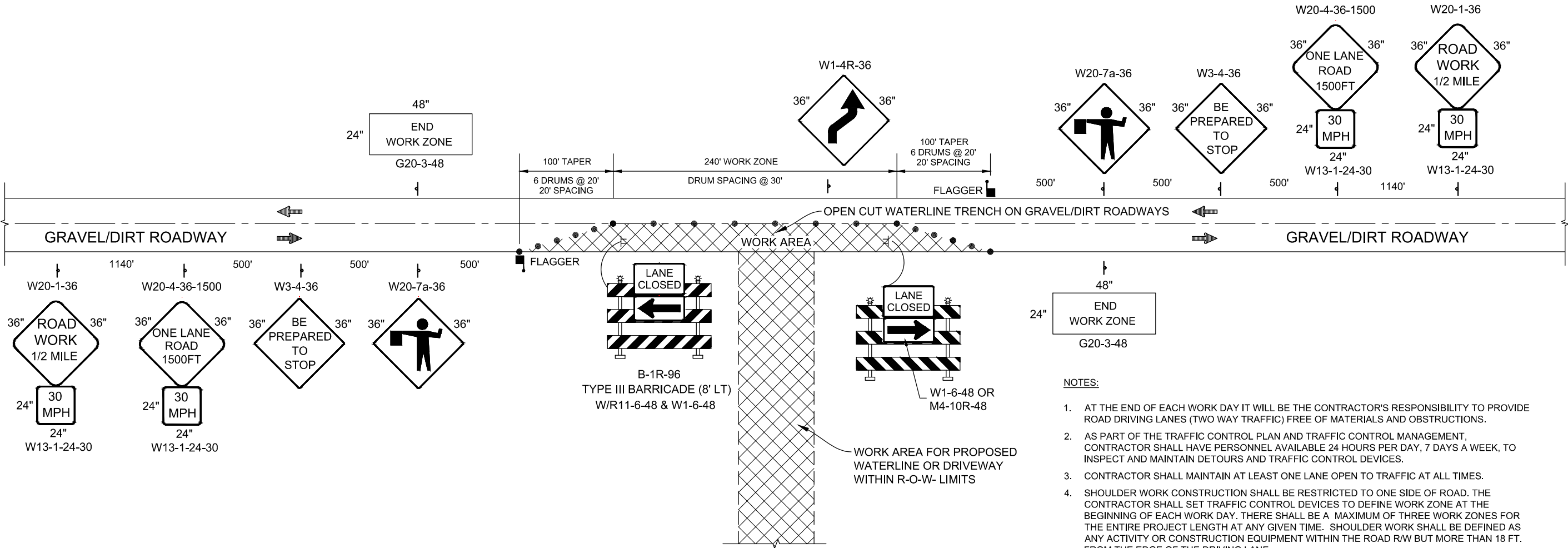
Chk'd

Revised 24.1 JAN SWPPP 8/16 Dmk-ajg  
10/24/2016 1:24:32 PM aw



ALL SIGNS ARE BLACK ON ORANGE  
UNLESS OTHERWISE SPECIFIED

EACH SIGN FACE SHOWN ON PLANS SHALL MEET THE SPECIFICATIONS  
IN THE STANDARD HIGHWAY SIGNS MANUAL (CURRENT EDITION) FOR  
PROPER ARRANGEMENT AND SPACING OF LETTERS, LETTER HEIGHT,  
LETTER SERIES, SYMBOLS, AND BORDERS FOR THE SPECIFIED SIZE  
AND MESSAGE AS SHOWN ON THE PLANS.



NOTES:

1. AT THE END OF EACH WORK DAY IT WILL BE THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE ROAD DRIVING LANES (TWO WAY TRAFFIC) FREE OF MATERIALS AND OBSTRUCTIONS.
2. AS PART OF THE TRAFFIC CONTROL PLAN AND TRAFFIC CONTROL MANAGEMENT, CONTRACTOR SHALL HAVE PERSONNEL AVAILABLE 24 HOURS PER DAY, 7 DAYS A WEEK, TO INSPECT AND MAINTAIN DETOURS AND TRAFFIC CONTROL DEVICES.
3. CONTRACTOR SHALL MAINTAIN AT LEAST ONE LANE OPEN TO TRAFFIC AT ALL TIMES.
4. SHOULDER WORK CONSTRUCTION SHALL BE RESTRICTED TO ONE SIDE OF ROAD. THE CONTRACTOR SHALL SET TRAFFIC CONTROL DEVICES TO DEFINE WORK ZONE AT THE BEGINNING OF EACH WORK DAY. THERE SHALL BE A MAXIMUM OF THREE WORK ZONES FOR THE ENTIRE PROJECT LENGTH AT ANY GIVEN TIME. SHOULDER WORK SHALL BE DEFINED AS ANY ACTIVITY OR CONSTRUCTION EQUIPMENT WITHIN THE ROAD R/W BUT MORE THAN 18 FT. FROM THE EDGE OF THE DRIVING LANE.
5. DURING NON-WORKING HOURS, THE CONTRACTOR SHALL MOVE DRUMS, SIGNS, AND OTHER TRAFFIC CONTROL DEVICES TO ROW FENCE AND LAY SIGNING DOWN AWAY FROM TRAFFIC.
6. NIGHT-TIME CONDITIONS: THE CONTRACTOR SHALL NOT PARK CONSTRUCTION EQUIPMENT, OR LEAVE MATERIALS WITHIN 24 FT. OF THE EDGE OF DRIVING LANE.
7. THE CONTRACTOR SHALL PROVIDE ACCESS TO ALL DRIVEWAYS AND TURNOUTS AT ALL TIMES.
8. LANE CLOSURE SHALL BE USED WHEN ANY CONSTRUCTION EQUIPMENT, CONSTRUCTION MATERIAL, OR CONSTRUCTION OBJECTS ARE WITHIN 18 FT. FROM EDGE OF DRIVING LANE.
9. ALL CONSTRUCTION TRAFFIC CONTROL DEVICES SHALL COMPLY WITH BIA-NAVAJO REGIONAL OFFICE DEPARTMENT OF TRANSPORTATION REQUIREMENTS. SANDOVAL COUNTY ROAD DEPARTMENT / PUBLIC WORKS REQUIREMENTS, THE NEW MEXICO STATE DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR HIGHWAY AND BRIDGE CONSTRUCTION, LATEST EDITION, AND THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, LATEST EDITION.
10. EXCEPT DURING AN EMERGENCY, NO NIGHT-TIME WORK TO BE PERFORMED.
11. ALL STAGING AREAS AND MATERIAL AND EQUIPMENT STORAGE SHALL BE CONFINED TO PROJECT R/W AND ARE SUBJECT TO THE SAME RESTRICTIONS AS THE WORK AREAS AS SET FORTH ABOVE.
12. CONTRACTOR RESPONSIBLE FOR NOTIFICATION OF AND COORDINATION WITH GAS COMPANIES AND OTHER UTILITIES WORKING IN AREA PRIOR TO/DURING ANY LANE CLOSURES. SEE SHEET DT-4 FOR GAS COMPANY CONTACT INFORMATION.

TRAFFIC CONTROL LAYOUT - LANE CLOSURE OF  
GRAVEL/DIRT ROADWAY FOR  
CONSTRUCTION OF WATERLINE CROSSING  
OR CONSTRUCTION OF DRIVEWAY

LANE CLOSURE (LEFT AND RIGHT)  
OPEN CUT GRAVEL/DIRT ROADWAYS

NMDOT CHANNELIZATION DEVICES, TYPE: DRUM, NO. 702525. TOTAL OF  
18 DRUMS REQUIRED.

Revision	Date	Description	By	Chk'd



**SMA**  
Soudier, Miller & Associates  
Engineering & Surveying

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Client: The Navajo Nation Location: Reach 24.1 JAN Turnout to JAN Border, NM

**TRAFFIC CONTROL (GRAVEL AND DIRT ROAD)  
WATERLINE OR DRIVEWAY  
NAVAJO GALLUP WATER SUPPLY  
PROJECT - REACH 24.1 JAN  
SANDOVAL COUNTY, NEW MEXICO**

Designed	Drawn	Checked
GMM	AAV	GMM



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NOTICE OF EXTENDED  
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WITHIN 45 DAYS AFTER  
SUBMISSION OF  
AN UNDISPUTED REQUEST  
FOR PAYMENT.



Date:	October 24, 2016
Scale:	Horiz: NONE Vert: N/A
Project No:	6921307
Sheet:	DT-24



ELECTRICAL SYMBOL LEGEND	
SYMBOL	DESCRIPTION
	WALL OUTLET AND SURFACE MOUNTED FIXTURE
	FLUORESCENT OUTLET AND FIXTURE
	SINGLE POLE SWITCH, FLUSH MOUNTED 48" A.F.F.
	DUPLEX CONVENIENCE OUTLET, 18" A.F.F.
	WEATHERPROOF DUPLEX CONVENIENCE OUTLET, 18" A.F.F.
	DUPLEX CONVENIENCE OUTLET, GROUND FAULT CIRCUIT INTERRUPTER, 18" A.F.F.
	JUNCTION BOX INSTALLED ABOVE LAY-IN CEILING WITH FLEXIBLE CONDUIT CONNECTION TO LAY-IN FIXTURES. MAXIMUM 4'-0" LENGTH OF CONDUIT, WITH REQUIRED CONDUCTORS ALONG WITH GREEN GROUND CONDUCTOR
	JUNCTION BOX FLUSH IN WALL, HEIGHT AS INDICATED ON DRAWINGS, WITH CONNECTION TO EQUIPMENT
	CONCEALED BRANCH CIRCUIT WITH CONDUCTORS AS INDICATED. NEUTRAL, HOT, SWITCH LEG AND GROUND RESPECTIVELY
	BRANCH CIRCUIT OR CONDUIT INSTALLED UNDERGROUND OR UNDER FLOOR
	HOMERUN TO PANELBOARD WITH BRANCH CIRCUIT NUMBERS INDICATED
	SOLENOID VALVE
	LIMIT SWITCH
	PRESSURE TRANSMITTER
	FIRE ALARM SMOKE AND HEAT DETECTOR, PHOTOELECTRIC TYPE, 120V AUX CONTACTS
	MOTOR CONNECTION FOR FRACTIONAL HP MOTOR (1/3 HP OR LESS). PROVIDE THERMAL OVERLOAD SWITCH (WEATHERPROOF IF OUTSIDE) ADJACENT TO MOTOR UNLESS SWITCH IS SHOWN ELSEWHERE ON PLANS
	MOTOR CONNECTION FOR MOTOR WITH HP INDICATED
	DISCONNECT SWITCH, POLES AND RATING AS INDICATED OR AS REQUIRED, NEMA 3R IF INSTALLED OUTSIDE
	FUSED DISCONNECT SWITCH, FUSE, POLES AND RATING AS INDICATED OR AS REQUIRED, NEMA 3R IF INSTALLED OUTSIDE
	COMBINATION MAGNETIC MOTOR CONTROLLER/DISCONNECT SWITCH. SIZE, POLES, FUSES AND OVERLOADS PER MOTOR SERVED
	MAGNETIC MOTOR CONTROLLER, SIZE AND POLES PER MOTOR SERVED
	TRANSFORMER, DRY TYPE, SIZE AS INDICATED
	THERMOSTAT(M), 48" A.F.F.
	120V PANELBOARD, REFER TO PANEL SCHEDULE
	277V PANELBOARD, REFER TO PANEL SCHEDULE
	SPECIAL PURPOSE CABINET, AS INDICATED ON DRAWINGS
	INTRUSION ALARM DOOR CONTACT MAGNETIC
	NORMALLY OPEN CONTACT
	NORMALLY CLOSED CONTACT
	CONTACTOR
	MOTOR OVERLOADS
	RED PILOT LIGHT
	GREEN PILOT LIGHT
	TRANSFORMER
	RELAY
	SWITCH
	FUSE(S)
	CIRCUIT BREAKER
PLC	PROGRAMMABLE LOGIC CONTROLLER
RTU	REMOTE TERMINAL UNIT
	THERMOSTAT
WP	WEATHERPROOF (NEMA 3R)
NIC	NOT IN CONTRACT
NTS	NOT TO SCALE
A.F.F.	ABOVE FINISHED FLOOR
A.F.G.	ABOVE FINISHED GRADE
NOTES:	
• LIGHTING FIXTURES ARE OF TYPE AS INDICATED ON LIGHT FIXTURE SCHEDULE U.N.O.	
• MOUNTING HEIGHTS FOR DEVICES CALLED OUT AT 18" A.F.F. ARE TO THE BOTTOM OF THE DEVICE UNLESS OTHERWISE NOTED.	
• MOUNTING HEIGHTS FOR DEVICES CALLED OUT AT 48" A.F.F. ARE TO THE TOP OF THE DEVICE UNLESS OTHERWISE NOTED.	
• ANY SPECIFIC DETAILS ABOVE (MOUNTING HEIGHTS, PART NUMBERS, CONNECTION METHODS, ETC.) MAY BE MODIFIED OR REPLACED BY INFORMATION ON PLANS, SCHEDULES, DETAILS, RISERS, ETC. DETAILS NOT SPECIFICALLY MODIFIED REMAIN AS GIVEN ABOVE.	

## GENERAL NOTES

## SPECIFICATIONS

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

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

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

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

## EXISTING UTILITIES + OBSTACLES TO WORK

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

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

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

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

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

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

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

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

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

## SITE CONDITIONS

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

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

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

## SITE DESIGN

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

G17) RESTORE SURFACE AT TRENCH TO EXISTING CONDITIONS.

## COMMUNICATION

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

## STAGING STORAGE + DEBRIS DISPOSAL

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

## RECORD DRAWINGS

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

## PHASE AND SCHEDULE

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

## SUBMITTALS

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

Revision	Date	Description	By	Chkd
Color Plot 24.1 JAN 2024 PWP Border.dwg 1/21/2014 9:14:50 AM				



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SURVEILLANCE & MEASUREMENT  
SURVEYING

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Client: The Navajo Nation Location: Reach 24.1 JAN Turnout to JAN Border, NM

**SURGE TANK BUILDING - ELECTRICAL LEGEND**  
**NAVAJO GALLUP WATER SUPPLY**  
**PROJECT - REACH 24.1 JAN**  
**SANDOVAL COUNTY, NEW MEXICO**

Designed AP	Drawn JKD	Checked DDR
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15024  
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Date: May 2, 2016

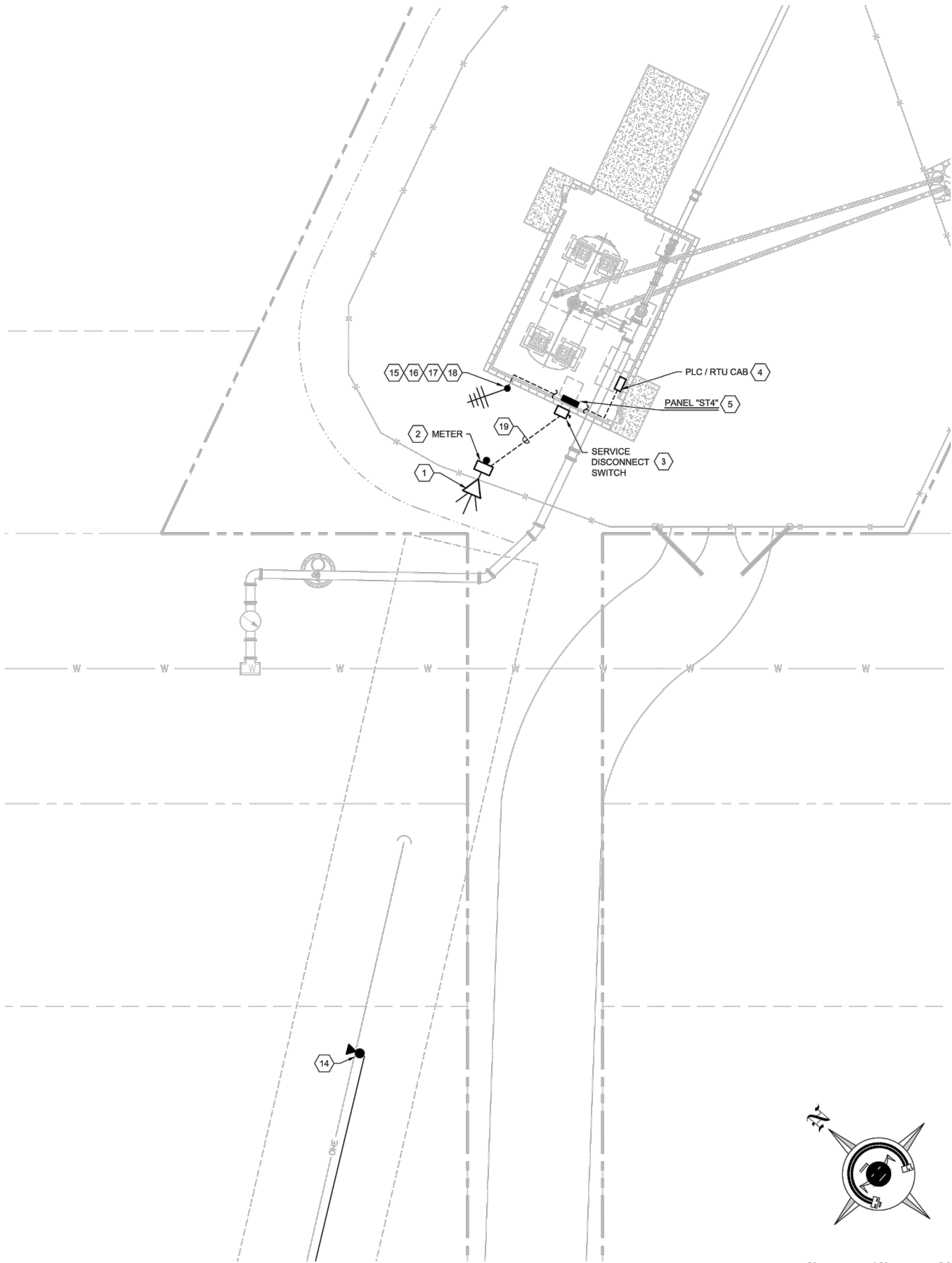
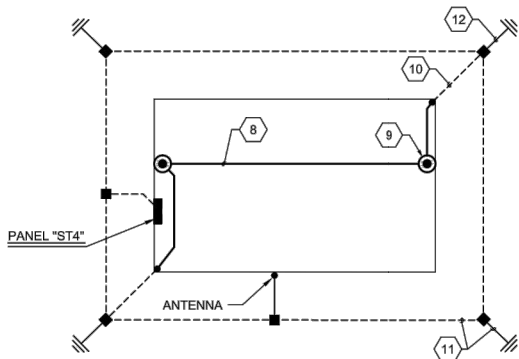
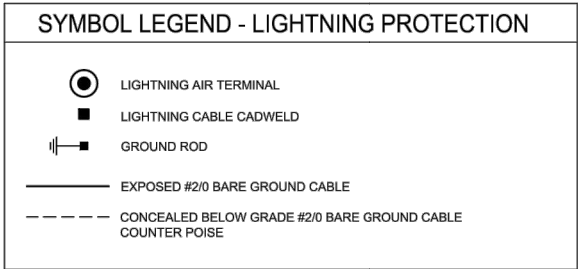
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Project No: 6921307

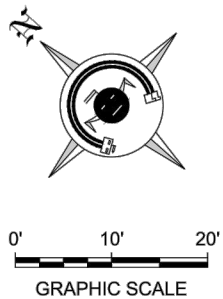
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**REACH 24.1 JAN SURGE TANK BUILDING - ELECTRICAL SITE PLAN** 6 7



**GENERAL NOTES**

- REFER TO LIGHTNING PROTECTION SPECIFICATION SECTION 26 60 10 FOR ADDITIONAL INFORMATION.
- CONTRACTOR SHALL PROVIDE LIGHTNING PROTECTION SYSTEM DRAWING BEFORE INSTALLATION, INCLUDING GROUND RODS AND GROUNDING CABLES (BELOW GROUND AND ABOVE ROOF)
- AFTER THE SYSTEM HAS BEEN INSTALLED, THE UL LISTED INSTALLER SHALL COMPLETE AND SUBMIT THE CERTIFICATION APPLICATION.
- THE UL LISTED INSTALLER SHALL FORWARD THE CERTIFICATION TO THE OWNER AND PROVIDE PROOF THAT THE LIGHTNING PROTECTION SYSTEM IS IN COMPLIANCE WITH UL, NFPA, OR U.S. GOVERNMENT STANDARDS.
- GROUND ROD AND BUILDING COUNTER POISE DEPTH SHALL BE 24" BELOW GRADE.
- ALL GROUNDING WIRING SHALL BE PROPERLY CONNECTED PER SPECS SECTION 26 45 00.
- THE CONTRACTOR SHALL SELECT AN ADHESIVE FOR THE AIR TERMINALS THAT MANUFACTURERS RECOMMEND AND IS COMPATIBLE FOR USE WITH THE ROOFING SYSTEM.
- ALL WIRING CONNECTIONS, AIR TERMINAL BASES, CLAMPS, AND PLATES THAT COME IN CONTACT WITH THE ROOFING MATERIAL SHALL BE INSTALLED USING AN APPROVED ADHESIVE. THE LIGHTNING PROTECTION SYSTEM INSTALLER SHALL NOT CREATE ANY PENETRATION IN THE ROOF WHEN INSTALLING THEIR EQUIPMENT.
- ALL WIRING CONNECTORS, AIR TERMINALS, CLAMPS, ETC SHALL BE UL APPROVED FOR A LIGHTNING PROTECTION SYSTEM.

**KEYED NOTES**

- NEW OVERHEAD 240 VOLT, SINGLE PHASE LINE OF OVERHEAD CONDUCTORS TO POLE BY JEMEZ UTILITY COMPANY. POLE INSTALLED BY CONTRACTOR PER JEMEZ ELECTRIC COOP SPECIFICATION. VERIFY POWER POLE LOCATION WITH ENGINEER AND UTILITY PRIOR TO FINAL PLACEMENT.
- CONTRACTOR SHALL PROVIDE A METER ENCLOSURE MOUNTED ON POLE. REFER TO POWER RISER DIAGRAM FOR ADDITIONAL REQUIREMENTS. METER SHALL FACE TOWARDS FENCE. POLE PROVIDED AND INSTALLED BY THE CONTRACTOR. PROVIDE WORKING CLEARANCE BETWEEN METER AND FENCE PER N.E.C. REQUIREMENTS.
- SERVICE DISCONNECT SWITCH. REFER TO POWER RISER DIAGRAM, ON SHEET E201, FOR ADDITIONAL REQUIREMENTS.
- RTU/PLC CABINET. CABINET SHALL BE A NEMA 4X ENCLOSURE. COORDINATE FINAL LOCATION WITH THE GENERAL CONTRACTOR.
- SURGE TANK BUILDING LOAD CENTER. REFER TO POWER RISER DIAGRAM AND SURGE TANK BUILDING PLAN.
- REFER TO SURGE TANK BUILDING FLOOR PLAN FOR EQUIPMENT LAYOUT AND CIRCUITING.
- REFER TO LIGHTNING PROTECTION PLAN ON THIS SHEET FOR ADDITIONAL REQUIREMENTS.
- LIGHTNING PROTECTION CLASS 1 ROOF-MOUNTED LATERAL CONDUCTOR AND MOUNTING HARDWARE.
- 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.
- LIGHTNING PROTECTION 2/0 BARE COPPER DOWN-CONDUCTOR.
- LIGHTNING PROTECTION COUNTERPOISE SYSTEM. ALL CONNECTIONS SHALL BE EXO-THERMIC WELDS.
- GROUND ROD. 3/4" X 10'-0" GROUND ROD
- LIGHTNING PROTECTION SYSTEM LAYOUT ON THIS PLAN IS FOR BIDDING PURPOSES ONLY. INSTALLATION TO BE PER NFPA-780, U.S. GOVERNMENT STANDARDS AND SPECIFICATIONS SECTION 26 60 10. SYSTEM SHALL BE PROVIDED WITH A MASTER LABEL.
- POLE TRANSFORMER AND SECONDARY AERIAL CONDUCTORS PROVIDED BY JEMEZ UTILITY. COORDINATE POLE AND GUY LOCATIONS WITH UTILITY.
- INSTALL A YAGI ANTENNA ON TOP OF ANTENNA MAST, ANTENNA SHALL BE ADJUSTED FOR MAXIMUM SIGNAL STRENGTH AT THE COUNSELOR TANK SITE. REFER TO SHEETS E102 & E202 FOR COAXIAL ANTENNA CABLE REQUIREMENT
- 1" CONDUIT WITH CABLE FROM PLC TO ANTENNA MAST, TYPICAL FOR TWO ANTENNA CABLES.
- BOND ANTENNA CABLE CONDUIT AND ANTENNA MAST TO A 8' X 5/8" COPPER-CLAD STEEL GROUND ROD AND TO BUILDING COUNTER POISE WITH #4 COPPER GROUND CONDUCTORS.
- REFER TO ANTENNA DETAIL ON SHEET E202 FOR ADDITIONAL REQUIREMENTS.
- UNDERGROUND SECONDARY CONDUIT CONDUCTOR, REFER TO POWER RISER ON SHEET E201.

**WARNING**

IF ANY UTILITY LINES, PIPELINES, OR UNDERGROUND UTILITY LINES ARE SHOWN ON THESE DRAWINGS, THEY ARE SHOWN IN AN APPROXIMATE MANNER ONLY, AND SUCH LINES MAY EXIST WHERE NONE ARE SHOWN. IF ANY SUCH EXISTING LINES ARE SHOWN, THE LOCATION IS BASED UPON INFORMATION PROVIDED BY THE UTILITY OR PIPELINE COMPANY, THE OWNER OR BY OTHERS, AND THE INFORMATION MAY BE INCOMPLETE, OR MAY BE OBSOLETE BY THE TIME CONSTRUCTION COMMENCES.

THE ENGINEER HAS UNDERTAKEN NO FIELD VERIFICATION OF THE LOCATION, DEPTH, SIZE OR TYPE OF EXISTING UTILITY LINES, PIPELINES, OR UNDERGROUND UTILITY LINES, MAKES NO REPRESENTATION PERTAINING THERETO, AND ASSUMES NO RESPONSIBILITY OR LIABILITY THEREFORE. THE CONTRACTOR SHALL INFORM ITSELF TO THE LOCATION OF ANY UTILITY LINE, PIPELINE OR UNDERGROUND UTILITY LINE IN OR NEAR THE AREA OF THE WORK IN ADVANCE OF AND DURING EXCAVATION WORK. THE CONTRACTOR IS FULLY RESPONSIBLE OF ANY AND ALL DAMAGE CAUSED BY IT'S FAILURE TO LOCATE, IDENTIFY AND PRESERVE ANY AND ALL EXISTING UTILITIES, LINES, PIPELINES, OR UNDERGROUND UTILITY LINES. THE CONTRACTOR SHALL COMPLY WITH STATE STATUTES, MUNICIPAL AND LOCAL ORDINANCES, RULES, AND REGULATIONS, IF ANY, PERTAINING TO THE LOCATION OF THESE LINES AND FACILITIES IN PLANNING AND CONDUCTING EXCAVATION, WHETHER BY CALLING OR NOTIFYING THE UTILITIES, COMPLYING WITH "NM ONE CALL" PROCEDURES, OR OTHERWISE.

Revision	Date	Description	By	Chk'd
1	09/12/16	UPDATED SITE PLAN	KND	TFR

Client: The Navajo Nation Location: Reach 24.1 JAN Turnout to JAN Border, NM

**SURGE TANK ELECTRICAL SITE PLAN**

**NAVAJO GALLUP WATER SUPPLY PROJECT - REACH 24.1 JAN SANDOVAL COUNTY, NEW MEXICO**

15024

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

NOTICE OF EXTENDED PAYMENT PROVISION: THIS CONTRACT ALLOWS THE OWNER TO MAKE PAYMENT WITHIN 45 DAYS AFTER SUBMISSION OF AN UNDISPUTED REQUEST FOR PAYMENT.

**811** Know what's below. Call before you dig.

Date: SEPT 12, 2016

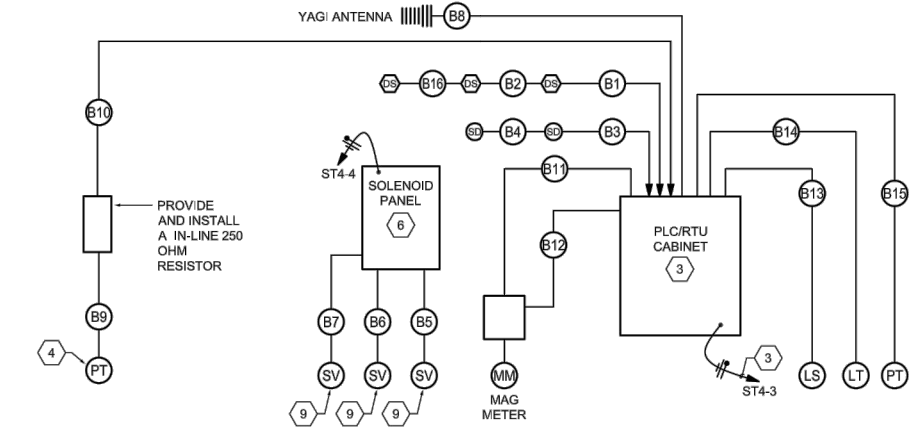
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Project No: 6921307

Sheet: E101JAN

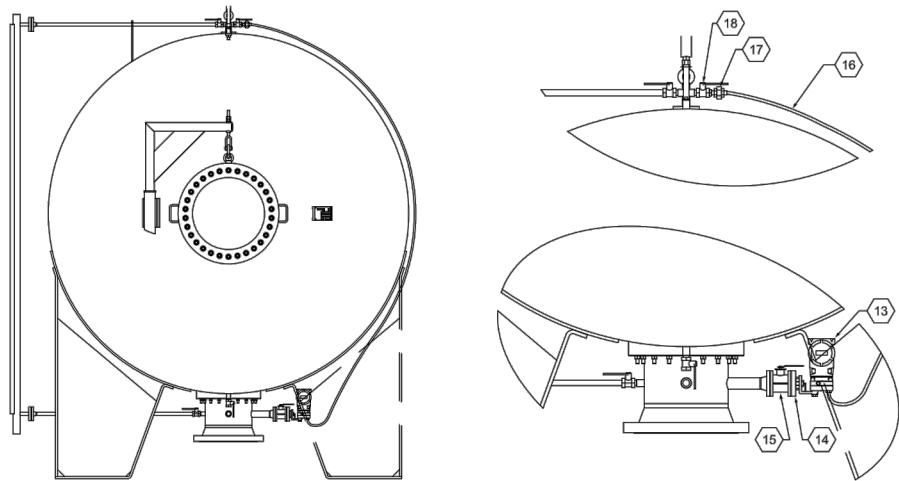
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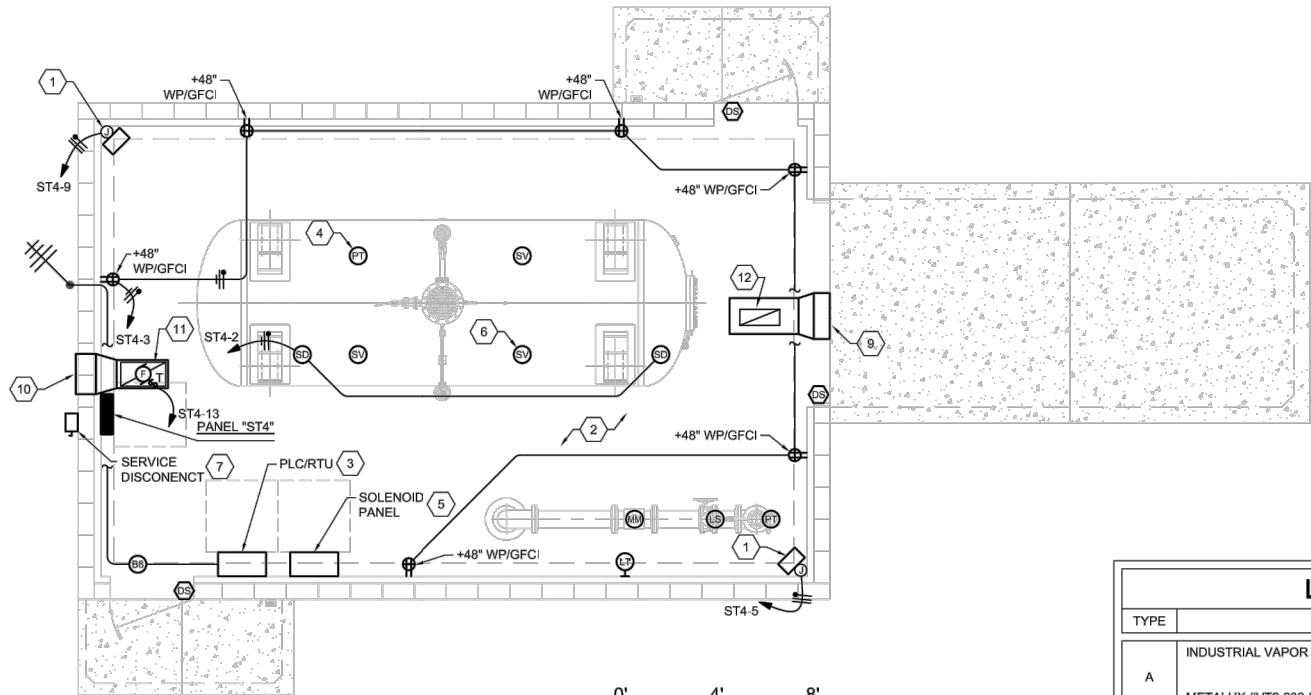
**SURGE TANK BUILDING - CONTROL RISER DIAGRAM**

SCALE: NONE



**ROSEMOUNT 3051 - PRESSURE DIFFERENTIAL TRANSMITTER - CONNECTION DETAIL**

SCALE: NONE



**SURGE TANK BUILDING - POWER PLAN**

0' 4' 8'  
GRAPHIC SCALE



**SURGE TANK BUILDING - LIGHTING PLAN**

ITEM	DESCRIPTION
13	PRESSURE DIFFERENTIAL TRANSMITTER ROSEMOUNT 3051
14	2" FLANGED CONNECTION HIGH PRESSURE DIAPHRAGM SEAL
15	2" BALL VALVE
16	STAINLESS STEEL FLEXIBLE TUBING TEFLON LINED
17	1/2" NPT UNION FITTING
18	1/2" NPT BALL VALVE

0' 4' 8'  
GRAPHIC SCALE



PANEL: "ST4"				OC DEVICE TYPE: BREAKER				ENCLOSURE: NEMA 3R				MAINS (A): 100 MCB			
LOCATION: SURGE TANK BUILDING				DEVICE FAMILY: BOLT ON				MOUNTING: SURFACE				WIRING: 1 PH, 3 WIRE			
FED FROM: SERVICE DISCONNECT				MODEL:				VOLTAGE: 120/240V				AIC: 10,000			
BKR SIZE	NOTES	DESCRIPTION	DEMAND CODE	LOAD (VA)	CKT NO.	PHASE A	LOADS PHASE B	CKT NO.	LOAD (VA)	DEMAND CODE	DESCRIPTION	NOTES	BKR SIZE		
20A/1P		LIGHTING	LTS	584	1	634		2	50		SMOKE DETECTOR		20A/1P		
20A/1P		RECEPTACLES	REC	540	3		640	4	100		SOLENOID PANEL		20A/1P		
30A/2P		UNIT HEATER		2066	5	2066		6			SPARE		20A/1P		
				2066	7		2166	8	100		PT CONTROL PNL		20A/1P		
30A/2P		UNIT HEATER		2066	9	2606		10	540	REC	RECEPTACLES		20A/1P		
				2066	11		2066	12			SPARE		20A/1P		
20A/1P		EXHAUST FAN	MECH	830	13	830		14			SPACE		20A/1P		
20A/1P		SPARE			15			16			SPACE				
20A/1P		SPARE			17			18			SPACE				
20A/1P		SPARE			19			20			SPACE				
KVA		AMPS	PHASE TOTALS:		VA	AMPS	NOTES:								
SECT. 1	11.0	45.9	PHASE A:		6136	51.1	1.) NEUTRAL BAR, GROUND BAR								
			PHASE B:		4872	40.6	2.) 20 TOTAL POLES								
TOTAL	11.0	45.9													

**LIGHT FIXTURE SCHEDULE**

TYPE	FIXTURE DESCRIPTION	LAMPS	MOUNTING
A	INDUSTRIAL VAPOR TIGHT FIXTURE, WET LOCATION RATED. METALUX #VT2-232-LEX-120V-EB81-WL	(2) 32 WATT T8	SURFACE MOUNT
B	WALL PACK - 70 WATT MH, DARK SKY COMPLIANT, WITH PHOTOCELL LUMARK #LM70C-WITH WIRE GUARD - WITH PHOTOCELL	(1) 70 WATT MH	MOUNT AT 8'-0" TO TOP OF FIXTURE

## KEYED NOTES

- PROVIDE AND INSTALL A 2.6 KW 240 VOLTS, SINGLE PHASE ELECTRIC WALL MOUNTED HEATER WITH INTEGRAL THERMOSTAT. HOMERUN 3 # 10 - 3/4" CONDUIT TO CIRCUIT INDICATED. HEATER SHALL BE AS MANUFACTURED BY CHROMALOX #HVH-02-1-00-TL-D-00-0-0-S-HVW-1
- ALL CONDUITS SHALL BE RUN OVERHEAD.
- NEW PLC/RADIO CABINET. CABINET SHALL BE A NEMA 4X ENCLOSURE. PLC CONFIGURED TO OWNER STANDARDS AND REQUIREMENTS. REFER TO SHEETS E301 THRU E303 AND SPECIFICATIONS. REFER TO SPECIFICATIONS SECTION 27 43 30 FOR RADIO REQUIREMENTS. MOUNT ON WALL ADJACENT TO PLC CABINET. PROVIDE WITH RADIO ANTENNA CABLE SURGE ARRESTOR BETWEEN ANTENNA CABLE AND RADIO.
- 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.
- 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 GOLDER, NEMA 3R ENCLOSURE.
- 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.
- REFER TO POWER RISER DIAGRAM ON SHEET E201 FOR SERVICE EQUIPMENT SIZES AND WIRING.
- 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.
- 18X18 AIR INTAKE GRILLE - RUSKIN ELF375 OR EQUAL. INSTALL IN GABLE BETWEEN ROOF TRUSSES. DIMENSIONS MAY BE MODIFIED TO EQUIVALENT PERFORMANCE TO ACCOMMODATE STRUCURAL CONSTRAINTS. PROVIDE DUCTWORK TRANSITION AS REQUIRED.
- 18X18 EXHAUST GRILLE - RUSKIN ELF375 OR EQUAL. INSTALL IN GABLE BETWEEN ROOF TRUSSES. DIMENSIONS MAY BE MODIFIED TO EQUIVALENT PERFORMANCE TO ACCOMMODATE STRUCURAL CONSTRAINTS. PROVIDE DUCTWORK TRANSITION FROM EXHAUST FAN.
- 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.
- 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.

Client: The Navajo Nation Location: Reapah 24.1 JAN Turnout to JAN Border, NM

**SURGE TANK BUILDING - ELECTRICAL PLANS**  
NAVAJO GALLUP WATER SUPPLY  
PROJECT - REACH 24.1 JAN  
SANDOVAL COUNTY, NEW MEXICO

Designed AP Drawn JKD Checked DDR



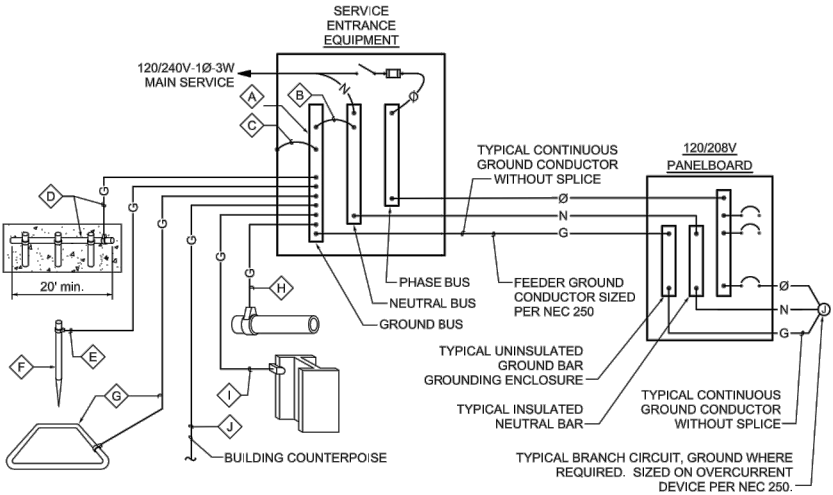
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THIS CONTRACT ALLOWS THE OWNER TO MAKE PAYMENT WITHIN 45 DAYS AFTER SUBMISSION OF AN UNDISPUTED REQUEST FOR PAYMENT



Date: May 2, 2016  
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Project No: 6921307  
Sheet: E102JAN





GROUNDING SYSTEM DIAGRAM - 120/240 VOLT SYSTEM

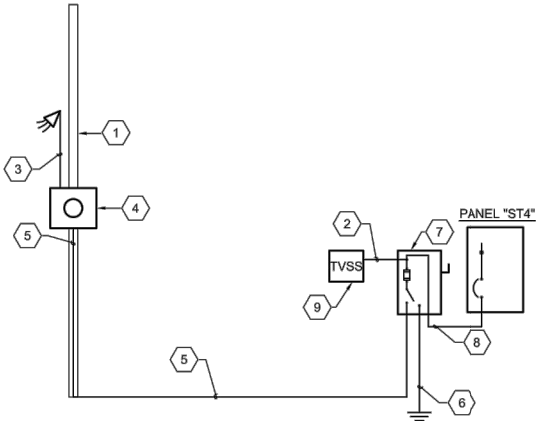
NOT TO SCALE

GROUNDING SYSTEM GENERAL NOTES

- A. THE GROUNDING ELECTRODE SYSTEM SHALL CONSIST OF ITEMS **A**, **B**, **C**, **D**, **E**, **F** AND **G**, WHERE APPLICABLE.
- B. ITEMS **H**, **I** AND **J** MUST BE BONDED TOGETHER AND TO THE GROUNDING ELECTRODE SYSTEM WHEN THEY ARE PRESENT.
- C. ITEM **D** CONCRETE ENCASED ELECTRODE (UFER) SHALL HAVE UFER SUPPORT CONSISTING OF 5/8" x 10' COPPER GROUND ROD CUT INTO 2 SECTIONS AND DRIVEN FOR SUPPORT OF UFER CONDUCTOR. ONLY COPPER TO COPPER CONNECTIONS ARE ACCEPTABLE. DO NOT USE RE-BAR FOR UFER SUPPORT. (THIS IS TO AVOID THE HARMFUL EFFECTS OF DISSIMILAR METALS IN CONTACT.) A U.L. LISTED COPPER TO RE-BAR CLAMP (SUCH AS GRAVES "JONES BOND" SYSTEM) IS AN APPROVED ALTERNATIVE.
- D. THIS DETAIL IS PROVIDED IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE, ARTICLE 250, PERTAINING TO THE "GROUNDING ELECTRODE SYSTEM".
- E. ALL SPLICING SHALL BE ACCOMPLISHED VIA EXOTHERMIC WELD (CAD-WELD) ONLY.
- F. ALL CONDUCTOR SIZING INDICATED ON THE GROUNDING SCHEDULE ARE FOR COPPER CONDUCTORS. ALUMINUM IS NOT PERMITTED.
- G. ANY VARIANCES FROM THIS DIAGRAM AND ASSOCIATED SCHEDULE AND NOTES MUST BE REQUESTED AND APPROVED IN WRITING PRIOR TO INSTALLATION.
- H. ALL INSTALLATIONS SHALL COMPLY WITH THE LATEST ADOPTED EDITION OF N.E.C. ARTICLE 250 (ALL SUBPARAGRAPHS) AND ALL STATE AND LOCAL REQUIREMENTS.
- I. THE GROUNDING SYSTEM SHALL PROVIDE LESS THAN (4) FOUR OHMS RESISTANCE TO GROUND AT THE SERVICE CONNECTION. THE RESULTS SHALL BE VERIFIED BY AN INDEPENDENT TESTING AGENCY VIA GROUND TEST (FALL-OF-POTENTIAL) AND SUBMITTED TO ELECTRICAL ENGINEER UPON COMPLETION OF PROJECT.

GROUNDING SCHEDULE

	<b>A</b> FACTORY INSTALLED GROUND BUS BAR	<b>B</b> INTEGRATED BUS BAR MAIN BOND JUMPER	<b>C</b> INTEGRATED BUS BAR CASE BOND JUMPER	<b>D</b> CONCRETE ENCASED ELECTRODE (UFER)	<b>E</b> GROUNDING ELECTRODE CONDUCTOR TO ROD, PIPE OR PLATE	<b>F</b> CU or CU-CLAD STEEL GROUND ROD	<b>G</b> COPPER GROUND RING CONDUCTOR	<b>H</b> METALLIC PIPING BONDING CONDUCTOR	<b>I</b> BUILDING STEEL BONDING CONDUCTOR	<b>J</b> BUILDING COUNTER POISE
CODE REFERENCE AMPACITY		N.E.C. 250.102	N.E.C. 250.102	N.E.C. 250.50(c) 250.66(b)	N.E.C. 250.52(c) 250.52(d) 250.66(a)	N.E.C. 250.52(c)(2)	N.E.C. 250.50(d) 250.66(c)	N.E.C. 250.50(a) 250.66	N.E.C. 250.50(b) 250.66	N.E.C. 250.66
100 AMP	SHALL BE SIZED TO ACCOMMODATE ALL GROUND WIRE LUGS AS INDICATED ON GROUNDING DIAGRAM AND/OR REFERENCED ELSEWHERE ON PLANS OR SPECIFICATIONS	#4	#4	#4	#6	5/8"x8"	#2	#4	#4	#2/0
225 AMP		#2	#2	#4	#6	5/8"x8"	#2	#2	#2	#2



REACH 24.1 JAN SURGE TANK BUILDING POWER RISER DIAGRAM

KEYED NOTES

- PROVIDE AND INSTALL A 25'-0" SOUTHERN PINE CLASS 4 WOOD POLE FOR THE INSTALLATION OF RISER, METER AND DISCONNECT.
- 4 # 8 - 1" CONDUIT BETWEEN TVSS AND PANEL.
- PROVIDE A 2" RGS CONDUIT ON POLE RISER WITH CONDUCTORS. COORDINATE INSTALLATION WITH JEMEZ ELECTRIC 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 TYPICAL 120/240 VOLT GROUND DETAIL
- PROVIDE AND INSTALL A FUSIBLE DISCONNECT SWITCH, 100 AMPS, 250 VOLTS, 2 POLE, SN 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, 1 # 8 GROUND 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.

Client: The Navajo Nation Location: Reach 24.1 JAN Turnout to JAN Border, NM

Client: The Navajo Nation Location: Reach 24.1 JAN Turnout to JAN Border, NM

Client: The Navajo Nation Location: Reach 24.1 JAN Turnout to JAN Border, NM

DESIGNED: AP DRAWN: JKD CHECKED: DDR

6729

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Sheet: E201JAN

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ALBUQUERQUE, NM 87107

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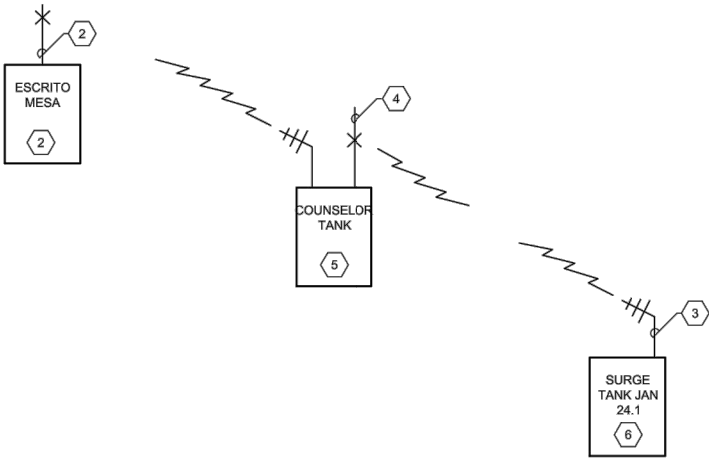
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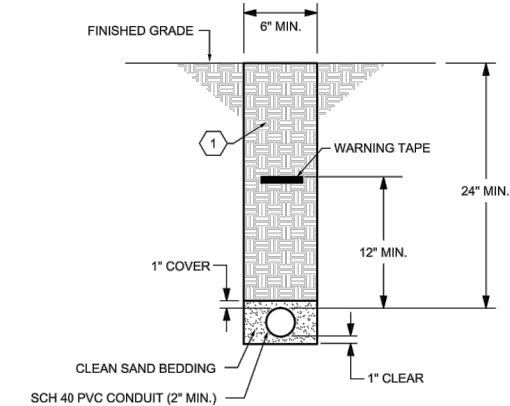
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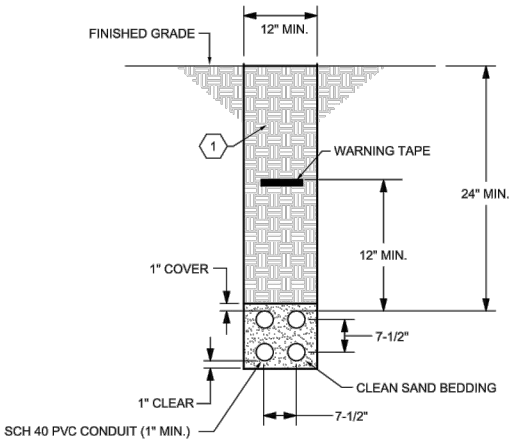


SCADA RADIO TELEMETRY SYSTEM CONFIGURATION



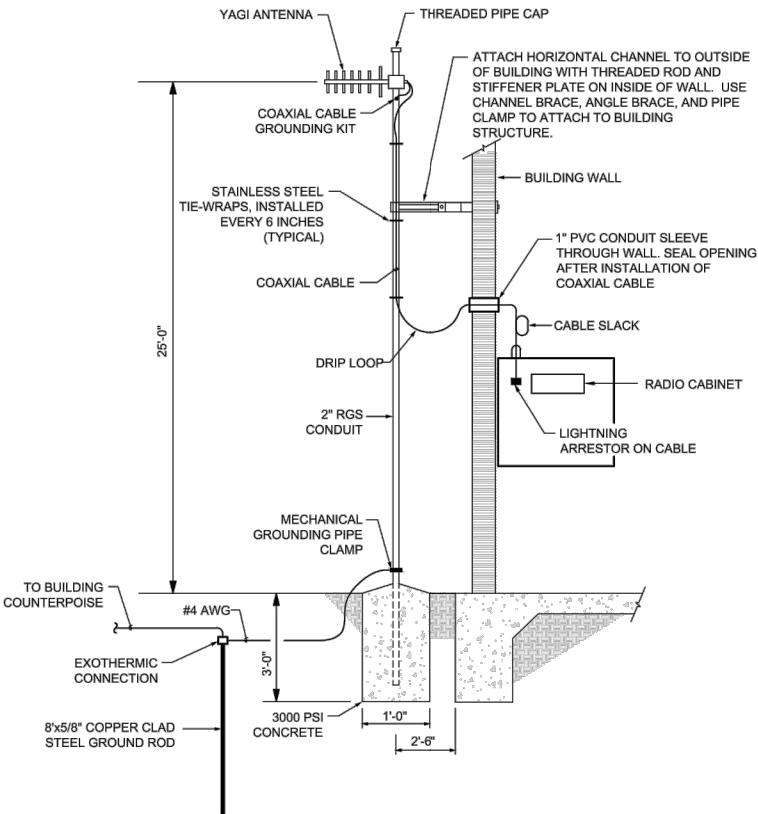
TYPICAL SINGLE CONDUIT TRENCH DETAIL

SCALE: NONE



TYPICAL MULTIPLE CONDUIT TRENCH DETAIL

SCALE: NONE



RADIO ANTENNA AND MAST DETAIL - REACH 24.1 JAN SURGE TANK BLDG.

SCALE: NONE

KEYED NOTES

1. REFER TO GENERAL NOTES ON SHEET E001 FOR BACKFILL REQUIREMENTS
2. EXISTING ESCRITO MESA SITE
3. NEW YAGI ANTENNA. REFER TO SPECIFICATION SECTION 27 43 30 FOR ADDITIONAL REQUIREMENTS.
4. EXISTING ANTENNA.
5. EXISTING COUNSELOR TANK SITE.
6. NEW UNLICENSED GE MDS TRANSNET 900 MHZ RADIO LINK. REFER TO SPECIFICATION 27 43 30 FOR ADDITIONAL REQUIREMENTS.

Revision	Date	Description	By	Chk'd

**SMA**  
Soudier, Miller & Associates  
Engineering & Surveying

3451 CANDELARIA ROAD NE, SUITE D  
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Client: The Navajo Nation Location: Reach 24.1 JAN Turnout to JAN Border, NM

ELECTRICAL DETAILS

NAVAJO GALLUP WATER SUPPLY  
PROJECT - REACH 24.1 JAN  
SANDOVAL COUNTY, NEW MEXICO

Designed	Drawn	Checked
AP	JKD	DDR

6729

REGISTERED PROFESSIONAL ENGINEER

5/27/16

15024

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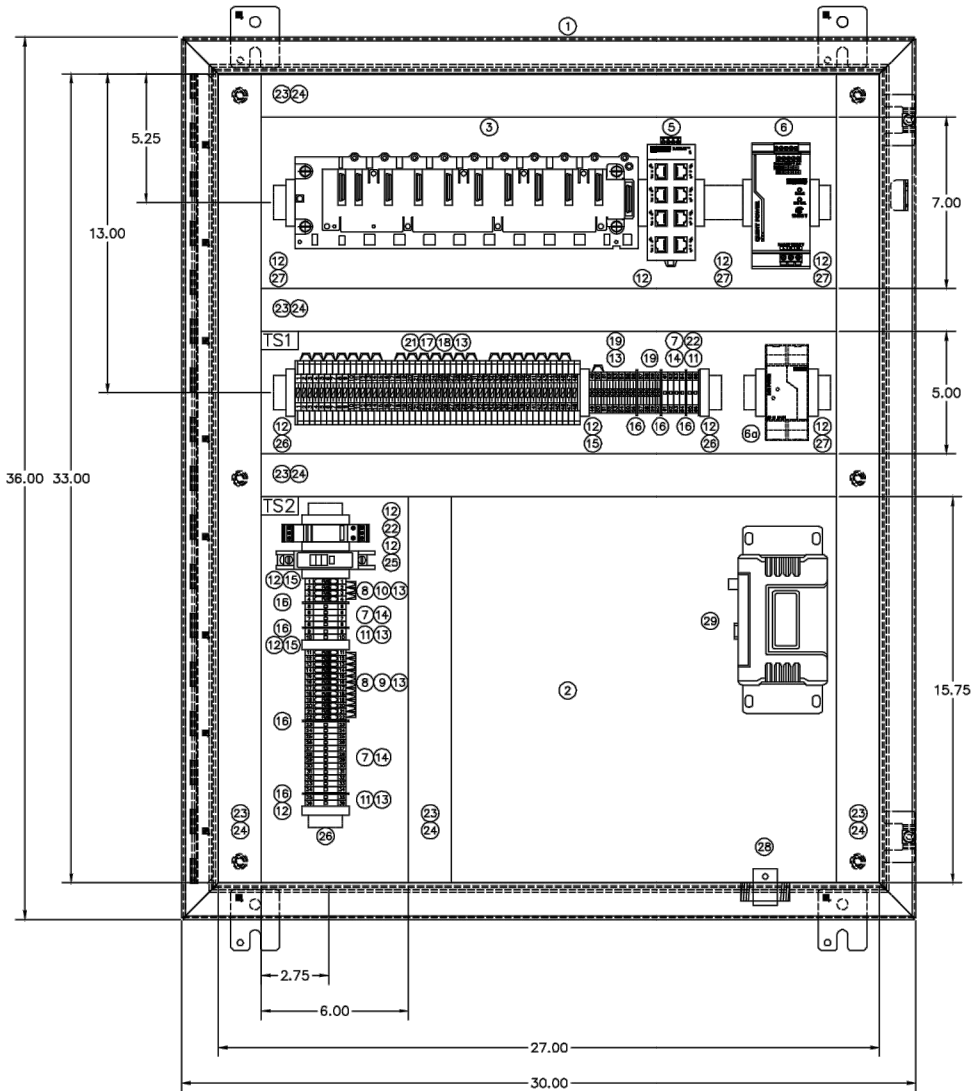
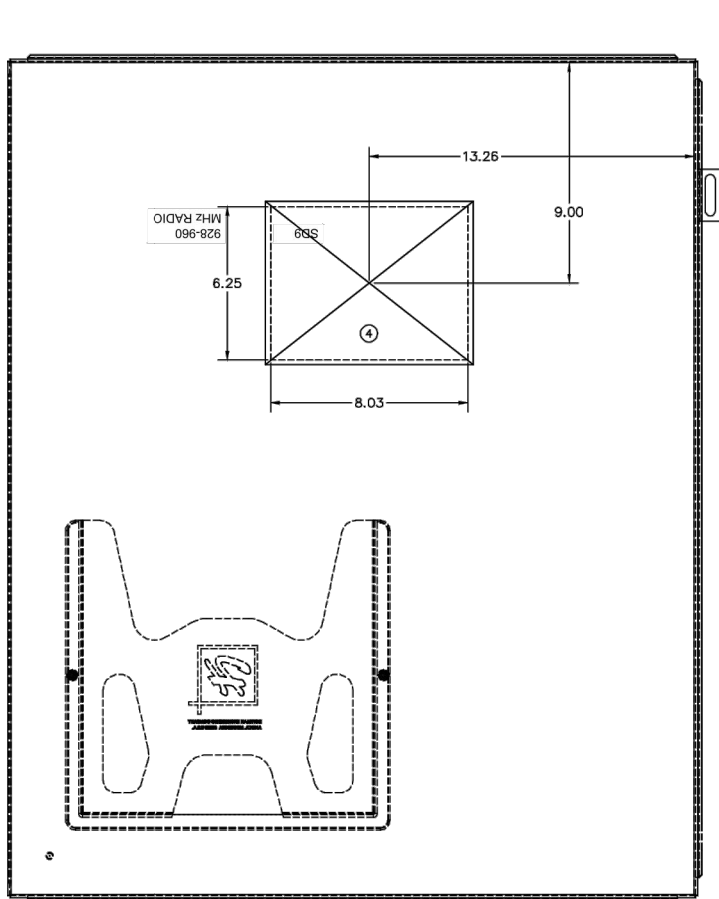
Project No: 6921307

Sheet: E202JAN









BILL OF MATERIALS			
ITEM	QTY	PART NO.	DESCRIPTION
1	1	SCE-363012LP	SINGLE-DOOR
1	1	A-363012LP	TYPE 12 ENCLOSURE
2	1	SCE-36P30	BACKPLANE
1	1	A-36P30	BACKPLANE
3*	1	M340	MODICON M340 BOM
3a	1	BMXXBM0800	8-SLOT RACK
3b	1	BMXCPS3020	POWER SUPPLY
3c	1	BMX342020	CPU PROCESSOR
3d	1	BMXDDI1602	DIGITAL INPUT
3e	1	BMXDDM1605	DIGITAL OUTPUT
3f	1	BMXAMIO410	ANALOG INPUT
3g	1	BMXAMO0210	ANALOG OUTPUT
3h	1	BMXNOR0200H	ETHERNET/SERIAL RTU
3i	4	BMXFTB2010	REMOVABLE CONNECTION
4	1	XBT-GT4230	7.5 GRAPHIC TERMINAL
5	1	FL SWITCH	7.5 GRAPHIC TERMINAL
6	1	SFN BTX	ETHERNET SWITCH
6a	1	QUINT-PS/1AC/24DC/10	POWER SUPPLY
7	20	UK5 N	10-15V ADJUSTABLE
8	16	UK4TG	UK5 N TERMINALS
9	12	ST-SILED24UK4	FUSE TERMINAL BASE
10	4	ST-SILA250UK4	FUSE
11	6	USLKG5	GROUNDING TERMINAL
12	15	E/NS35N	END CLAMP
13	10	FB10-6	FIXED BRIDGE
14	10	EB10-6	INSERTION BRIDGE
15	10	D-UK4/10	END COVER
16	10	ATP-UK	PARTITION PLATES
17	3	DP-UKK3/5BK	SLKK5 SPACER PLATE
18	3	D-UKK3/5BK	SLKK5 ENDCOVER
19	12	TT-UK5/24DC	TERMITRAB UK5
20	1	W/SUPPRESSOR DIODE	W/SUPPRESSOR DIODE
21	48	TT-SLKK5/24DC	TERMITRAB SLKK5
22	1	PT2PE/S120FM	TERMITRAB AC SURGE
23	AN	F2X4LG6	PROTECTION
24	AN	C2LG6	TYPE F NARROW SLOT
25	1	QOU115	WIRING DUCT
26	1	1492DR6	WIRING DUCT COVER
27	1	1492-DR5	CIRCUIT BREAKER
28	1	IS-SONX-C2	EXTENDED DIN RAIL
29	1	TRANSNET	DIN RAIL
30	1	CAT5E	LIGHTNING ARRESTER
31	1	CABLE - PLC TO	928-960 MHz RADIO
31	1	CABLE - PLC TO	CABLE - PLC TO
31	1	CABLE - PLC TO	MODEM (TO LENGTH)

01	09/13	MATERIALS LIST & DWG UPDATES		NTJ/A
NO.	DATE	DESCRIPTION		BY
NAVAJO TRIBAL UTILITY AUTHORITY				
SCOLD	NONE	REVISION		BY DATE
DATE				
DATE	DDL			
APPROV				
TITLE	PLC CONTROL PANEL			N/A
BACKPLANE				SHEET 5 OF 6





**Know what's  
below.  
Call before  
you dig.**