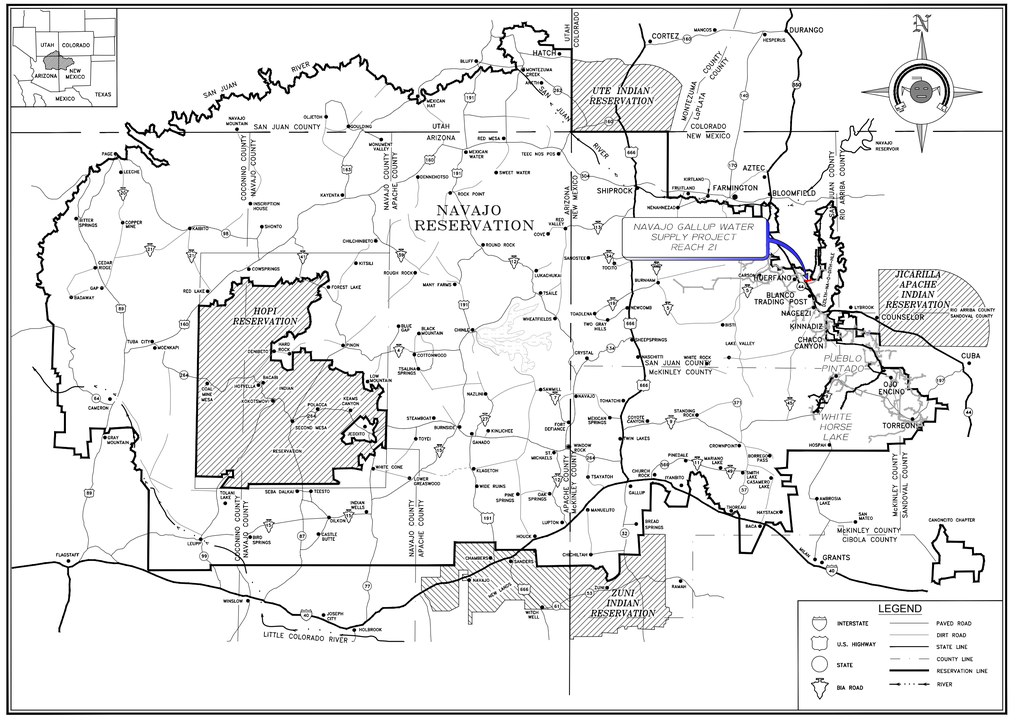
NAVAJO GALLUP WATER SUPPLY PROJECT
REACH 21

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

NGWSP REACH 22 TO ENWP PHASE 3
December 2017

PROJECT DESCRIPTION

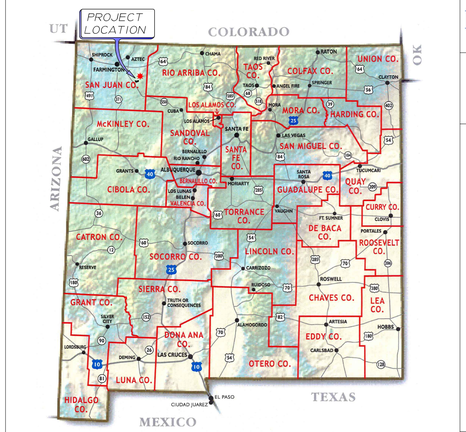
THE PROJECT CONSISTS OF CONSTRUCTION OF
1.09 MILES OF 24" PVC & 2.69 MILES OF 20" PVC AND HDPE WATERLINE
WITH A 500K GALLON WATER STORAGE TANK



NAVAJO RESERVATION
PROJECT SITE MAP

60% REVISED DRAFT 12-7-17

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



PROJECT VICINITY MAP

DRAWING LIST

GENERAL

G-1	COVER SHEET & DRAWING LIST
G-2	GENERAL NOTES & LEGEND
G-3	PROJECT SITE PLAN AND DRAWING KEY INDEX
G-4	SURVEY CONTROL PLAN (1 OF 2)
G-5	SURVEY CONTROL PLAN (2 OF 2)
G-6	HYDRAULIC PROFILE

REACH 21 PLAN AND PROFILES

C-1	PLAN & PROFILE STA -0+21.4 To 24+00
C-2	PLAN & PROFILE STA 24+00 To 48+00
C-3	PLAN & PROFILE STA 48+00 To 58+00
C-4	PLAN & PROFILE STA 58+00 To 82+00
C-5	PLAN & PROFILE STA 82+00 To 106+00
C-6	PLAN & PROFILE STA 106+00 To 127+00
C-7	PLAN & PROFILE STA 127+00 To 151+00
C-8	PLAN & PROFILE STA 151+00 To 173+00
C-9	PLAN & PROFILE STA 173+00 To 188+00
C-10	PLAN & PROFILE STA 188+00 To 199+76.3

SITEPLANS

C-11	REACH 22 TANK SITE NO. 2 TIE IN
C-12	REACH 21 TANK SITE NO. 3 SITE PLAN
C-13	REACH 21 TANK SITE NO. 3 GRADING PLAN
C-14	REACH 21 TANK SITE NO. 3 STORMWATER BMP PLAN
C-15	REACH 21 TANK SITE NO. 3 PIPING PLAN
C-16	REACH 21 TANK SITE NO. 3 SITE VALVE NUMBERS
C-17	ENWP PHASE 3 TIE IN
C-18	DZ TANK SITE PIPING PLAN UPDATES

DETAILS

DT-1	PIPELINE TRENCH DETAILS
DT-2	MISCELLANEOUS CONSTRUCTION DETAILS
DT-3	THRUST BLOCK DETAILS
DT-4	WALL ANCHOR BLOCK & PIPE TRANSITION DETAILS
DT-5	GAS LINE CROSSING DETAILS
DT-6	ROAD CROSSING DETAILS
DT-7	PIPELINE BUTTERFLY VALVE DETAILS
DT-8	SITE BUTTERFLY & GATE VALVE DETAILS
DT-9	3-INCH VACUUM RELIEF WITH 2-INCH AIR RELEASE VALVE DETAIL
DT-10	4-INCH FLUSH VALVE WITH RISER DETAIL
DT-11	WASH CROSSING STA 42+02 PIPELINE HDD DETAIL
DT-12	WASH CROSSING STA 95+37 PIPELINE HDD DETAIL
DT-13	WASH CROSSING STA 129+92 PIPELINE HDD DETAIL
DT-14	TANK DETAILS (1 of 2)
DT-15	TANK DETAILS (2 of 2)
DT-16	TYPICAL WATER STORAGE TANK DETAILS (1 of 2)
DT-17	TYPICAL WATER STORAGE TANK DETAILS (2 of 2)
DT-18	STANDARD FENCE DETAILS
DT-19	EROSION CONTROL DETAILS (1 of 2)
DT-20	EROSION CONTROL DETAILS (2 of 2) AND R-O-W GRADING
DT-21	TRAFFIC CONTROL (GRAVEL AND DIRT ROAD)

ELECTRICAL

900-E-2001	ELECTRICAL TANK SITE PLAN

INSTRUMENTATION AND CONTROLS

900-I-0001	FACILITY 900 FINISH WATER
900-I-0002	TYPICAL ANALYZER PANEL CL2

ACCESS ROAD

900-C-2000	ROAD PLAN AND PROFILE STA X+XX TO X+XX
900-C-2001	ROAD PLAN AND PROFILE STA X+XX TO X+XX
900-C-2300	ROAD DETAILS

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Managing Water in the West

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"U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION"
NAVAJO-GALLUP WATER SUPPLY PROJECT
NEW MEXICO
CUTTER LATERAL - REACH 21
WATER PIPELINE

NO.	DATE	REVISION	BY	APVD

T Tadano
DESIGNED
M Howard / A Vogenthaler
DRAWN
A Robertson
CHECKED
TECH. APPR.
APPROVED
NAME/INITIAL - TITLE
FARMINGTON, NM 2017-12-07

REACH 21 PIPELINE

COVER SHEET & DRAWING LIST

SHEET G-1

SHEET of

DATE AND TIME PLOTTED
12/7/2017
PLOTTED BY
abr

CAD SYSTEM
AUTOCAD
CAD FILENAME
Reach 21 Cover-Gen Notes.dwg

GENERAL NOTES

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

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

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

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

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

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

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

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

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

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

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

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

13. ALL SURVEY CONTROL MARKERS AND COORDINATES SHOWN ON PLANS ARE PROVIDED BY OWNER. ENGINEER MAKES NO REPRESENTATION AS TO THEIR ACCURACY.

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

15. THE PLAN AND PROFILE SHEETS SHOW HORIZONTAL BENDS WITHOUT SPECIFYING WHETHER THE HORIZONTAL BEND IS TO BE ACCOMPLISHED BY DI ELLS OR JOINT DEFLECTION OF JOINTED PVC PIPE. THE METHOD OF BENDING IS AT CONTRACTOR'S OPTION, PROVIDED ALL DESIGN REQUIREMENTS SET FORTH IN THE DRAWINGS AND SPECIFICATIONS ARE MET. VERTICAL BENDS SHALL BE COMPLETED BY JOINT DEFLECTION OF JOINTED PVC, INSTALLATION OF VERTICAL DUCTILE IRON ELLS SHALL NOT BE ALLOWED.

16. 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.

17. ALL SCALES ARE BASED ON 22" x 34" SHEET SIZE.

CONTACT INFORMATION:

SOUDER, MILLER & ASSOCIATES (ENGINEER):

TORY TADANO, P.E (OFFICE) (505) 299-0942 (CELL) (505) 215-2807

ABBREVIATIONS

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

LEGEND
EXISTING

- 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
- 6490 — CONTOUR MAJOR
- 6492 — CONTOUR MINOR
- SECTION CORNER
- 12 — SECTION NUMBER
- Tribal Trust/I.A./BLM — CURRENT LAND STATUS (OWNER)
- SECTION LINE
- QUARTER SECTION LINE
- TOWNSHIP / RANGE LINE
- AREA OF POTENTIAL EFFECT
- FEMA 100 YEAR FLOODPLAIN EXTENTS
- X — FENCE
- OHE — OVERHEAD POWER LINE
- UGE — UNDERGROUND POWER LINE
- TEL — OVERHEAD TELEPHONE LINE
- UGT — UNDERGROUND TELEPHONE LINE
- W — WATER LINE
- G — GAS LINE

LEGEND
PROPOSED

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

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NAVAJO GALLUP WATER SUPPLY PROJECT
U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
NEW MEXICO

CUTTER LATERAL - REACH 21
WATER PIPELINE

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NO.	REVISION	DATE	BY	APVD

T Tadano — DESIGNED
M Howard / A Vogenthaler — DRAWN
A Robertson — CHECKED
TECH. APPR.
APPROVED — ADMIN APPROVAL - TITLE

FARMINGTON, NM 2017-12-07

REACH 21 PIPELINE

GENERAL NOTES & LEGEND

SHEET G-2

SHEET of

DATE AND TIME PLOTTED
12/7/2017
PLOTTED BY
alrr

CAD SYSTEM
AUTOCAD
CAD FILENAME
Reach 21 Cover-Gen Notes.dwg

SAN JUAN COUNTY, NEW MEXICO

North 1977600 | East 2712500 | East 2741200

R-10-W | R-9-W

Huerfano Mountain

Hwy 44 / U.S. 550

BLM | TNT | I.A. 11155 | I.A. 37799 | I.A. 211164 | I.A. 211166 | STATE

PROPOSED REACH 21 TANK SITE NO. 3 (SEE SITE PLAN C-12 THRU C-16)

EXISTING EXISTING NTUA WATERLINES

ENWP PHASE 3 WATERLINE TIE IN (SEE SHEET C-17)

Huerfano Trading Post

Austin Land Dev. Co. Inc.

REACH 22B WATERLINE (BY OTHERS)

REACH 22 TANK SITE NO. 2 (BY OTHERS. SEE SHEET C-11)

C-1 | C-2 | C-3 | C-4 | C-5 | C-6 | C-7 | C-8 | C-9 | C-10

0+00 | 50+00 | 100+00 | 150+00 | 199+81

PROPOSED WATER TREATMENT PLANT (BY OTHERS)

PROPOSED NAVAJO GALLUP WATER SUPPLY PROJECT REACH 21

EXISTING EASTERN NAVAJO WATER PIPELINE PHASE 3

PVT.

0' 1000' 2000'

GRAPHIC SCALE

CONTACT INFORMATION:
SOUDER, MILLER & ASSOCIATES
ENGINEER: ANDREW ROBERTSON, P.E.
(505) 299-0942 Office

SURVEY DATUM
New Mexico, USA
Vertical: NAVD 88
Horizontal: NAD83 New Mexico State Plane, West Zone, US Foot

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M Howard / A Vogenthaler — DRAWN
A Robertson — CHECKED
TECH. APPR.
APPROVED (SIGNATURE & TITLE)
FARMINGTON, NM 2017-12-07

REACH 21 PIPELINE

PROJECT SITE PLAN AND DRAWING KEY INDEX

SHEET G-3

SHEET of

DATE AND TIME PLOTTED: 12/7/2017
PLOTTED BY: atw

CAD SYSTEM: AUTOCAD
CAD FILENAME: Cutter Reach 21 SURVEY TOPO Base.dwg

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SAN JUAN COUNTY, NEW MEXICO

Bureau of Land Management

Bureau of Land Management

Bureau of Land Management

Bureau of Land Management

State of New Mexico

North 1974400

East 2730700

East 2742000

REACH 22 TANK SITE NO. 2 (BY OTHERS, SEE SHEET C-11)

REACH 22B WATERLINE (BY OTHERS)

BEGIN REACH 21
PI STA -0+21.4
N=1973629.68
E=2735809.41

FOUND MONUMENT
MON USGLO BC 1/4 COR
N=1973267.06
E=2734572.65

FOUND MONUMENT
MON USGLO BC SC 4-3-9-10
N=1973235.10
E=2737190.90

PROPOSED
NAVAJO GALLUP WATER SUPPLY
PROJECT REACH 21

FOUND MONUMENT
MON USGLO BC 1/4 COR
N=1970584.33
E=2737148.23

AREA OF POTENTIAL EFFECT

20' TEMP. CONSTRUCTION ESMT.

60' WATERLINE ESMT.

20' TEMP. CONSTRUCTION ESMT.

PROPOSED
WATER TREATMENT
PLANT
(BY OTHERS)

FOUND MONUMENT
MON USGLO BC 1/4 COR
N=1968000.63
E=2734491.24

FOUND MONUMENT
MON USGLO BC SC 8-9-17-16
N=1968067.70
E=2731876.91

FOUND MONUMENT
MON USGLO BC SC 9-10-16-15
N=1967934.87
E=2737105.56

MATCHLINE
SEE SHT. G-5 (2 of 2)

0+00 10+00 20+00 30+00 40+00 50+00 60+00 70+00 80+00

0' 400' 800'

GRAPHIC SCALE

CONTACT INFORMATION:
SOUDER, MILLER & ASSOCIATES
ENGINEER: ANDREW ROBERTSON, P.E.
(505) 299-0942 Office

ALL SURVEY CONTROL MARKERS AND COORDINATES SHOWN ON PLANS ARE PROVIDED BY OWNER. ENGINEER MAKES NO REPRESENTATIONS AS TO THEIR ACCURACY.

SURVEY DATUM
New Mexico, USA
Vertical: NAVD 88
Horizontal: NAD83 New Mexico State Plane, West Zone, US Foot

LEGEND

W W	PROPOSED WATERLINE	Tribal Trust	CURRENT LAND STATUS (OWNER)
W	EXISTING WATERLINE		PROPOSED 60' WATERLINE EASEMENT
G	EXISTING GAS LINE		TEMPORARY CONSTRUCTION EASEMENT
X	EXISTING FENCE		DIRT ROAD
OHE	EXISTING OVERHEAD POWER LINE	6	SECTION NUMBER
OHE	PROPOSED OVERHEAD POWER LINE		SEC COR / QTR COR
	TOWNSHIP AND RANGE LINE		SMA CONTROL POINT
	SECTION LINE		EXISTING UTILITY POLE
	QUARTER SECTION LINE		PROPERTY LINE

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NEW MEXICO

CUTTER LATERAL - REACH 21

WATER PIPELINE

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NO.	DATE	REVISION	BY	APVD

T Tadano
DESIGNED
M Howard / A Vogenthaler
DRAWN
A Robertson
CHECKED
TECH. APPR.
APPROVED
ADMIN APPROVAL - TITLE
FARMINGTON, NM 2017-12-07

REACH 21 PIPELINE

SURVEY CONTROL PLAN (1 OF 2)

SHEET G-4

SHEET of

DATE AND TIME PLOTTED
12/7/2017
PLOTTED BY
alex

CAD SYSTEM
AUTOCAD
CAD FILENAME
Cutter Reach 21 SURVEY TOPO Base.dwg

East 2730700
North 1966600

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SAN JUAN COUNTY, NEW MEXICO

North 1970600 | East 2719100 | East 2730300

R-10-W | R-9-W

Bureau of Land Management

Navajo Tribal Trust

Indian Allotment 37799

Austin Land Development Company Inc. et al

FOUND MONUMENT
MON USGLO BC SC 12-7-13-18
N=1967988.44
E=2721378.90

FOUND MONUMENT
MON USGLO BC 1/4 COR
N=1967984.35
E=2724024.62

FOUND MONUMENT
MON USGLO BC SC 7-8-18-17
N=1967979.65
E=2726639.69

FOUND MONUMENT
MON USGLO BC 1/4 COR
N=1968023.81
E=2729257.91

FOUND MONUMENT
MON USGLO BC 1/4 COR
N=1966880.26
E=2726644.22

FOUND MONUMENT
FD BC 1/4 18/17 USGLO 1947
N=1965335.87
E=2726650.46

FOUND MONUMENT
FD BC 13/18/19/24 BLM 2008
N=1962722.75
E=2721369.07

PROPOSED
REACH 21
TANK SITE NO. 3
(SEE SITE PLAN C-12 THRU C-16)

PROPOSED
NAVAJO GALLUP WATER SUPPLY
PROJECT REACH 21

EXISTING
EXISTING NTUA WATERLINES

END REACH 21
PI STA 199+76.3
N=1965860.71
E=2721436.67

ENWP PHASE 3
WATERLINE TIE IN
(SEE SHEET C-17)

EXISTING
EASTERN NAVAJO WATER
PIPELINE PHASE 3

MATCHLINE
SEE SHT. G-4 (1 of 2)

20' TEMP. CONSTRUCTION EASEMENT

60' PERM. EASEMENT

100' PERM. CONSTRUCTION EASEMENT

100+00 | 110+00 | 120+00 | 130+00 | 140+00 | 150+00 | 160+00 | 170+00 | 180+00 | 190+00

0' 400' 800'
GRAPHIC SCALE

LEGEND

PROPOSED WATERLINE	CURRENT LAND STATUS (OWNER)
EXISTING WATERLINE	PROPOSED 60' WATERLINE EASEMENT
EXISTING GAS LINE	TEMPORARY CONSTRUCTION EASEMENT
EXISTING FENCE	DIRT ROAD
EXISTING OVERHEAD POWER LINE	SECTION NUMBER
PROPOSED OVERHEAD POWER LINE	SEC COR / QTR COR
TOWNSHIP AND RANGE LINE	SMA CONTROL POINT
SECTION LINE	EXISTING UTILITY POLE
QUARTER SECTION LINE	PROPERTY LINE

CONTACT INFORMATION:
SOUDER, MILLER & ASSOCIATES
ENGINEER: ANDREW ROBERTSON, P.E.
(505) 299-0942 Office

SURVEY DATUM
New Mexico, USA
Vertical: NAVD 88
Horizontal: NAD83 New Mexico State Plane, West Zone, US Foot

ALL SURVEY CONTROL MARKERS AND COORDINATES SHOWN ON PLANS ARE PROVIDED BY OWNER. ENGINEER MAKES NO REPRESENTATIONS AS TO THEIR ACCURACY.

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NAVAJO-GALLUP WATER SUPPLY PROJECT
NEW MEXICO

CUTTER LATERAL - REACH 21

WATER PIPELINE

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T Tadano — DESIGNED
M Howard / A Vogenthaler — DRAWN
A Robertson — CHECKED
TECH. APPR.
APPROVED — ADMIN APPROVAL - TITLE
FARMINGTON, NM — 2017-12-07

REACH 21 PIPELINE

SURVEY CONTROL PLAN (2 OF 2)

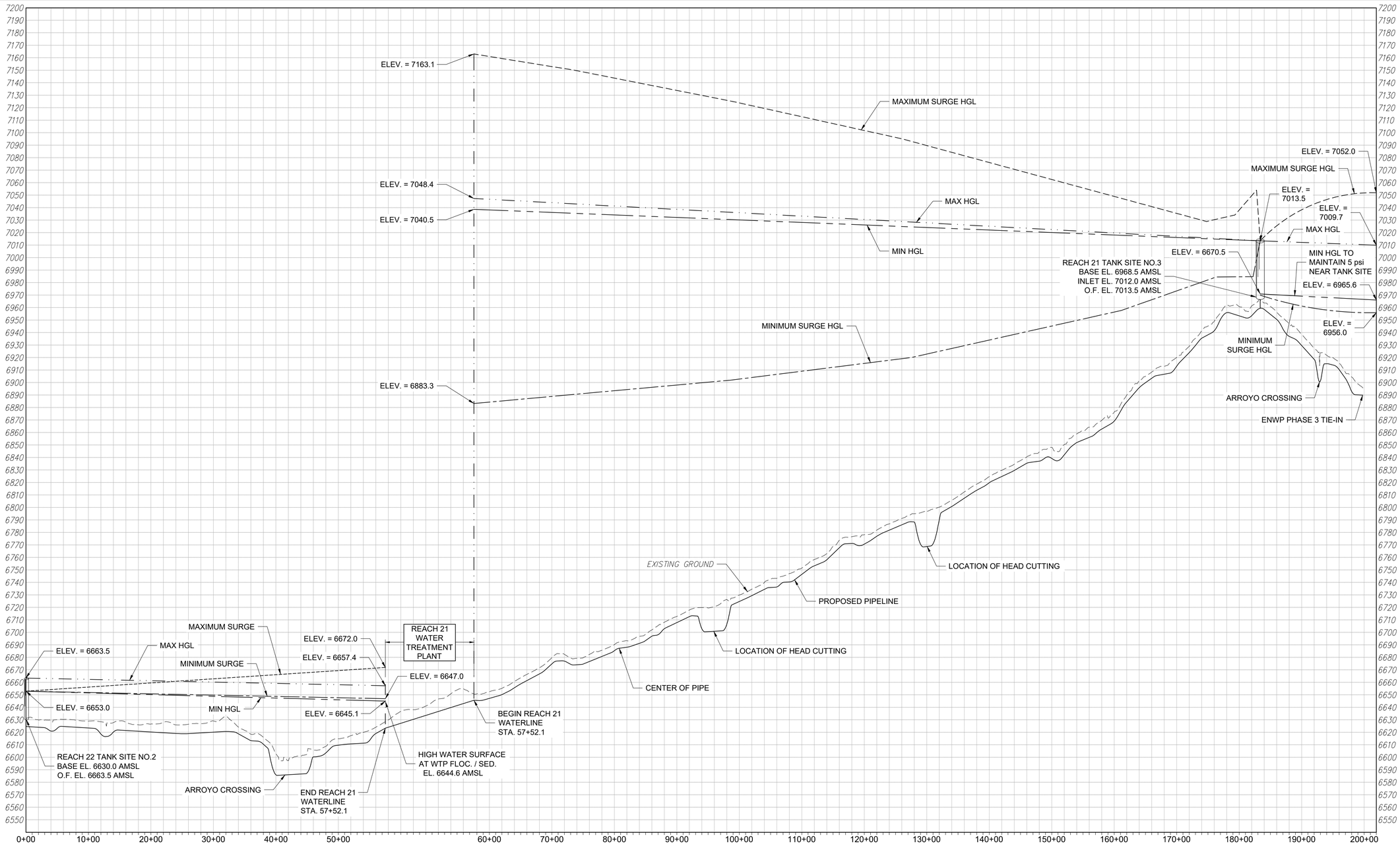
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NAVAJO GALLUP WATER SUPPLY PROJECT
REACH 21 STA. -00+21 TO 199+76
PHASE 2 FLOW RATE 5.39 MGD

LEGEND

- EXISTING GRADE AT ALIGNMENT CENTERLINE
- PROPOSED REACH 21 WATERLINE
- MAXIMUM SURGE HGL
- MINIMUM SURGE HGL
- MAXIMUM HGL
- MINIMUM HGL
- WATER STORAGE TANK

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DRAWN
A Robertson
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(BOR OFFICIAL) - TITLE
FARMINGTON, NM 2017-12-07

REACH 21 PIPELINE

HYDRAULIC PROFILE

SHEET G-6

SHEET of

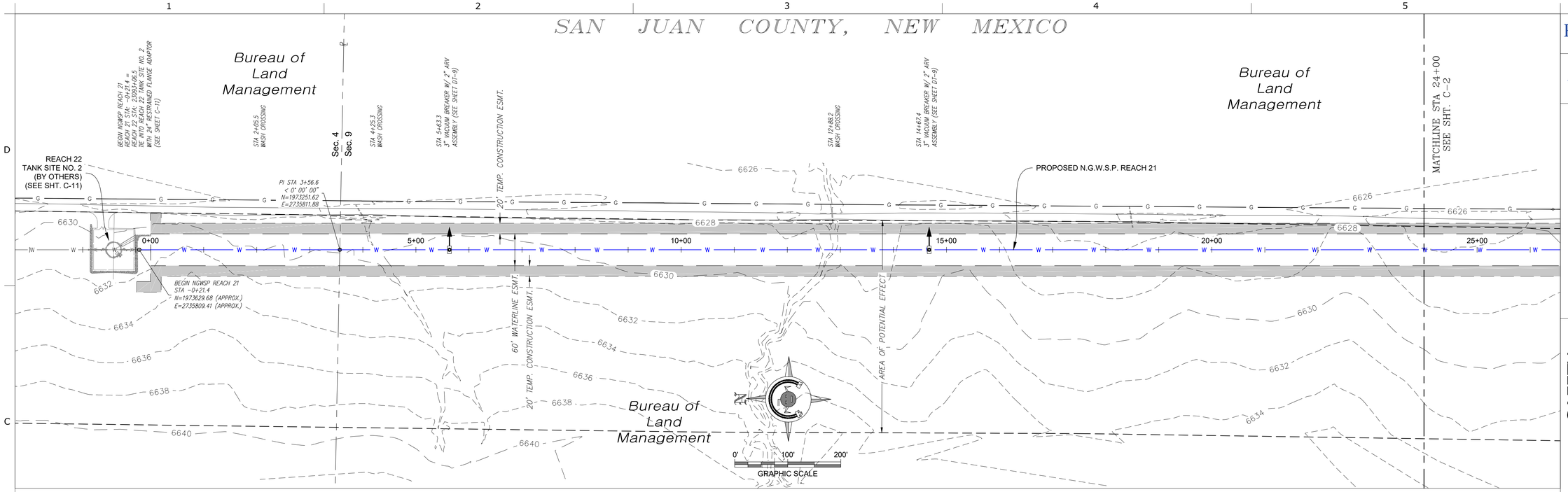
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CAD FILENAME
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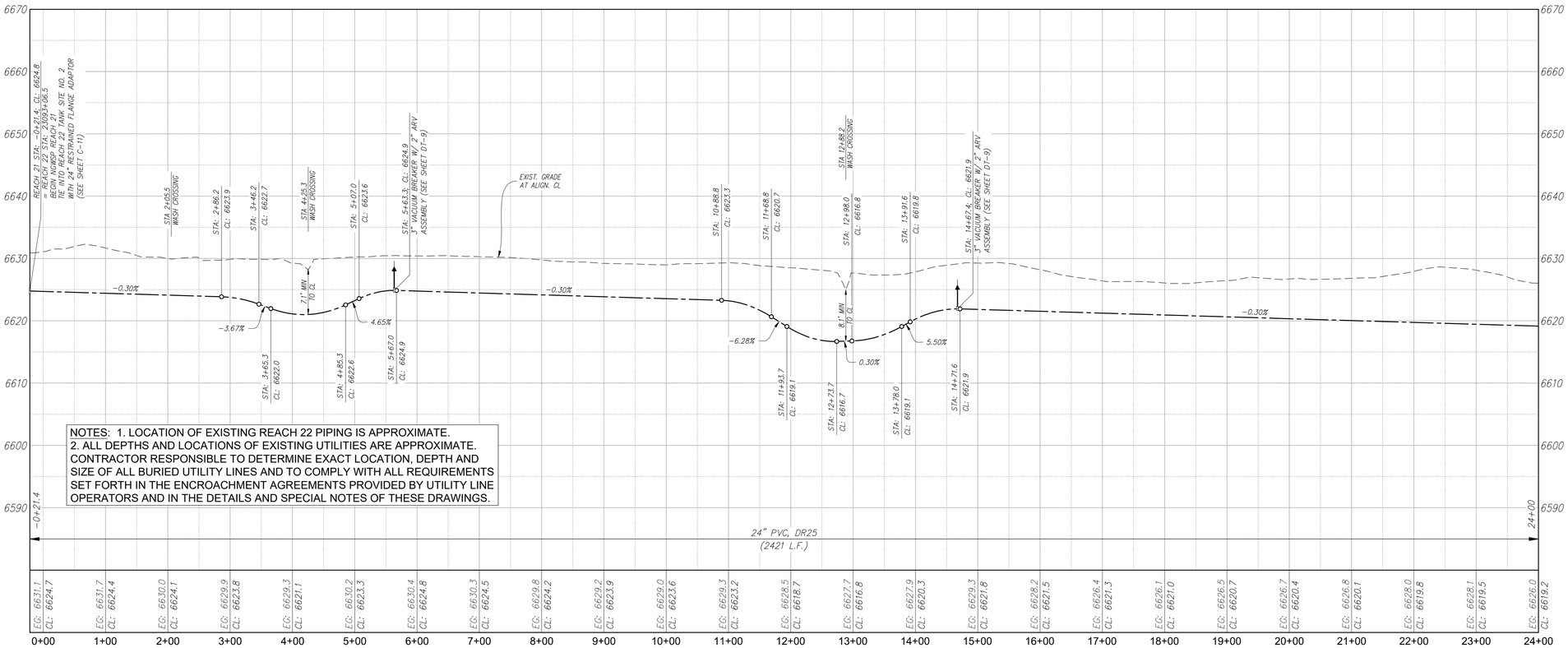
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SAN JUAN COUNTY, NEW MEXICO



PLAN VIEW
24" WATERLINE



NOTES: 1. LOCATION OF EXISTING REACH 22 PIPING IS APPROXIMATE.
2. ALL DEPTHS AND LOCATIONS OF EXISTING UTILITIES ARE APPROXIMATE. CONTRACTOR RESPONSIBLE TO DETERMINE EXACT LOCATION, DEPTH AND SIZE OF ALL BURIED UTILITY LINES AND TO COMPLY WITH ALL REQUIREMENTS SET FORTH IN THE ENCROACHMENT AGREEMENTS PROVIDED BY UTILITY LINE OPERATORS AND IN THE DETAILS AND SPECIAL NOTES OF THESE DRAWINGS.

PROFILE VIEW 24" WATERLINE
SCALE: HORIZ. 1" = 100' ; VERT. 1" = 10'

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BUREAU OF RECLAMATION

NAVAJO-GALLUP WATER SUPPLY PROJECT
NEW MEXICO

CUTTER LATERAL - REACH 21
WATER PIPELINE

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M Howard / A Vogenthaler — DRAWN
A Robertson — CHECKED
TECH. APPR.
APPROVED — AUTHORIZED REPRESENTATIVE - TITLE
FARMINGTON, NM — 2017-12-07

REACH 21 PIPELINE

PLAN & PROFILE STA -0+21.4 To 24+00

SHEET C-1

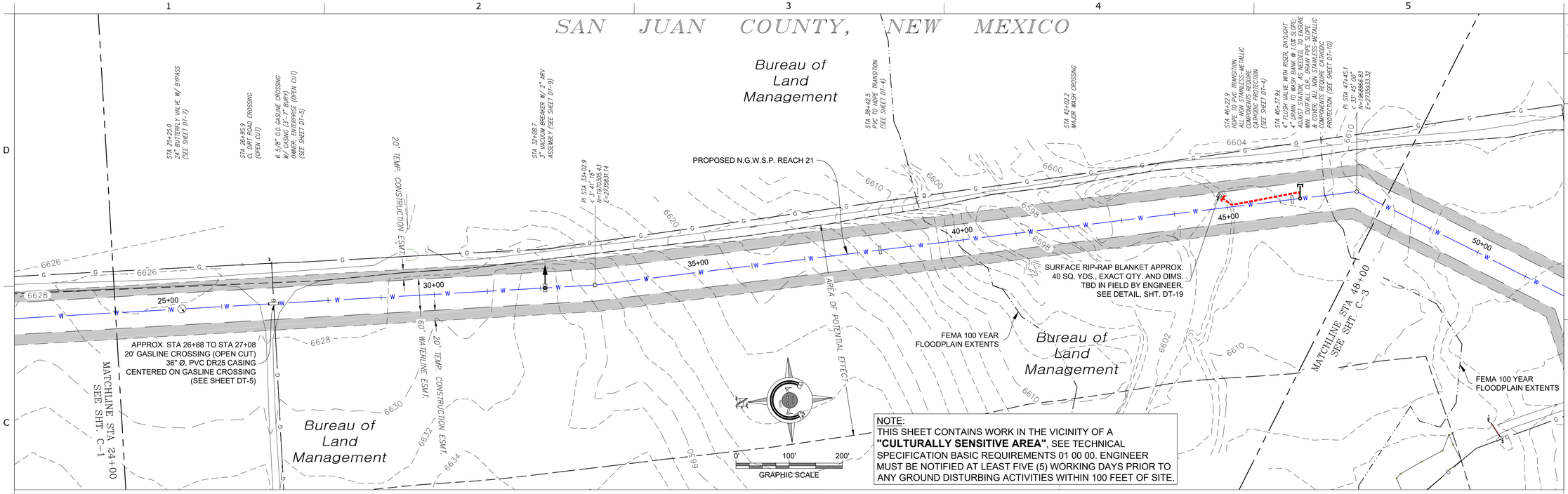
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CAD FILENAME: Reach 21 PnP's.dwg

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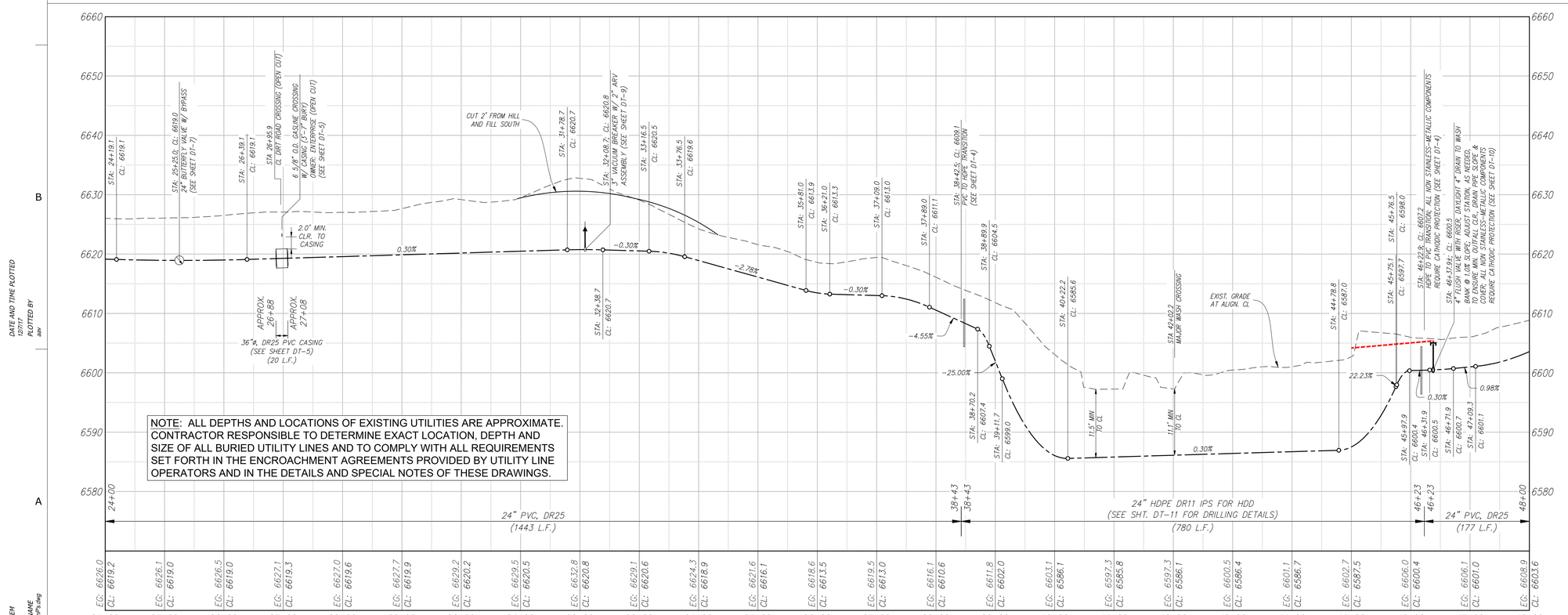
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NOTE:
THIS SHEET CONTAINS WORK IN THE VICINITY OF A **"CULTURALLY SENSITIVE AREA"**, SEE TECHNICAL SPECIFICATION BASIC REQUIREMENTS 01 00 00. ENGINEER MUST BE NOTIFIED AT LEAST FIVE (5) WORKING DAYS PRIOR TO ANY GROUND DISTURBING ACTIVITIES WITHIN 100 FEET OF SITE.

PLAN VIEW
24" WATERLINE



NOTE: ALL DEPTHS AND LOCATIONS OF EXISTING UTILITIES ARE APPROXIMATE. CONTRACTOR RESPONSIBLE TO DETERMINE EXACT LOCATION, DEPTH AND SIZE OF ALL BURIED UTILITY LINES AND TO COMPLY WITH ALL REQUIREMENTS SET FORTH IN THE ENCROACHMENT AGREEMENTS PROVIDED BY UTILITY LINE OPERATORS AND IN THE DETAILS AND SPECIAL NOTES OF THESE DRAWINGS.

PROFILE VIEW 24" WATERLINE
SCALE: HORIZ. 1" = 100' ; VERT. 1" = 10'

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BUREAU OF RECLAMATION
NAVAJO-GALLUP WATER SUPPLY PROJECT
NEW MEXICO

CUTTER LATERAL - REACH 21
WATER PIPELINE

Preliminary Draft Not For Construction

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A Robertson
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SUPV'R / MANAGER - TITLE
FARMINGTON, NM 2017-12-07

REACH 21 PIPELINE

PLAN & PROFILE
STA 24+00 To 48+00

SHEET C-2
SHEET of

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Bureau of Land Management

State of New Mexico

STA 49+57.0 BAR DITCH SHEEP CROSSING

PI STA 51+89.8 < 45° 00' 00" N=1968480.48 E=2735710.06

STA 53+83.3 CL DIRT ROAD CROSSING (OPEN CUT)

4 1/2" O.D. GASLINE CROSSING W/ CASING (4'-6" BURY) OWNER: ENTERPRISE (OPEN CUT) (SEE SHEET DT-5)

20' TEMP. CONSTRUCTION ESMT.

60' WATERLINE ESMT.

20' TEMP. CONSTRUCTION ESMT.

AREA OF POTENTIAL EFFECT

N=1968243.85 E=2735182.91

FOUND MONUMENT MON USGLO BC 1/4 COR N=1968000.63 E=2734491.24

Sec. 16

Sec. 9

MATCHLINE STA 58+00 SEE SHT. C-4

MATCHLINE STA 48+00 SEE SHT. C-2

PROPOSED N.G.W.S.P. REACH 21

PI STA 47+45.1 < 33° 45' 00" N=1968866.83 E=2735853.32

APPROX. STA 53+87 TO STA 54+07 20' GASLINE CROSSING (OPEN CUT) CENTERED ON GASLINE CROSSING 36" Ø, PVC DR25 CASING (SEE SHEET DT-5)

END REACH 21 WATERLINE STA 57+52.1 N=1968331.98 E=2735170.71 TIE INTO WATER TREATMENT PLANT INLET PLUMBING

N=1968381.91 E=2735163.81

PROPOSED WATER TREATMENT PLANT (BY OTHERS)

N=1968031.07 E=2733928.79

N=1968164.14 E=2733910.39

BEGIN REACH 21 WATERLINE STA 57+52.1 N=1968095.66 E=2733775.30 TIE INTO WATER TREATMENT PLANT OUTLET PLUMBING

FEMA 100 YEAR FLOODPLAIN EXTENTS

NOTE:
COORDINATE WITH WATER TREATMENT PLANT CONTRACTOR TO DETERMINE LOCATION, STAGING, TYPE AND TIMING OF CONNECTION TO WATER TREATMENT PLANT SITE PIPING.

NOTE:
THIS SHEET CONTAINS WORK IN THE VICINITY OF A **"CULTURALLY SENSITIVE AREA"**, SEE TECHNICAL SPECIFICATION BASIC REQUIREMENTS 01 00 00. ENGINEER MUST BE NOTIFIED AT LEAST FIVE (5) WORKING DAYS PRIOR TO ANY GROUND DISTURBING ACTIVITIES WITHIN 100 FEET OF SITE.

0' 100' 200'
GRAPHIC SCALE

PLAN VIEW
24" & 20" WATERLINE

NOTE: ALL DEPTHS AND LOCATIONS OF EXISTING UTILITIES ARE APPROXIMATE. CONTRACTOR RESPONSIBLE TO DETERMINE EXACT LOCATION, DEPTH AND SIZE OF ALL BURIED UTILITY LINES AND TO COMPLY WITH ALL REQUIREMENTS SET FORTH IN THE ENCROACHMENT AGREEMENTS PROVIDED BY UTILITY LINE OPERATORS AND IN THE DETAILS AND SPECIAL NOTES OF THESE DRAWINGS.

STA: 48+09.3 CL: 6604.0

STA: 48+57.0 BAR DITCH SHEEP CROSSING

STA: 48+84.5 CL: 6607.7

STA: 49+44.5 CL: 6609.4

STA: 51+10.8 CL: 6610.5

STA: 51+50.8 CL: 6610.7

STA 53+83.3 CL DIRT ROAD CROSSING (OPEN CUT)

4 1/2" O.D. GASLINE CROSSING W/ CASING (4'-6" BURY) OWNER: ENTERPRISE (OPEN CUT) (SEE SHEET DT-5)

STA: 54+32.0 CL: 6611.5

STA: 55+36.4 CL: 6616.1

STA: 55+96.4 CL: 6619.0

EXIST. GRADE AT ALIGN. CL

STA: 57+52.1; CL: 6623.4 END REACH 21 WATERLINE TIE INTO WATER TREATMENT PLANT INLET PIPING

WATER TREATMENT PLANT PIPING (BY OTHERS) (1418 L.F.)

STA: 57+52.1; CL: 6645.8 BEGIN REACH 21 WATERLINE TIE INTO WATER TREATMENT PLANT OUTLET PLUMBING

4.89%

0.65%

0.30%

2.82%

6.93%

-0.30%

2.0' MIN. CLR. TO CASING

APPROX. 53+87

APPROX. 54+07

36"ø, DR25 PVC CASING (SEE SHEET DT-5) (20 L.F.)

STA: 55+12.0 CL: 6614.4

48+00

57+52

24" PVC, DR25 (952 L.F.)

4.0' MIN. TO CL

57+52

58+00

20" PVC, DR18 (48 L.F.)

	48+00	49+00	50+00	51+00	52+00	53+00	54+00	55+00	56+00	57+00	58+00
EG:	6608.9	6613.8	6614.9	6615.8	6617.4	6618.4	6620.1	6621.7	6624.2	6627.0	6650.9
CL:	6603.6	6608.4	6609.7	6610.4	6610.8	6611.1	6611.4	6613.6	6619.1	6621.9	6645.6

PROFILE VIEW 24" & 20" WATERLINE
SCALE: HORIZ. 1" = 100' ; VERT. 1" = 10'

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BUREAU OF RECLAMATION
NAVAJO-GALLUP WATER SUPPLY PROJECT
NEW MEXICO

CUTTER LATERAL - REACH 21
WATER PIPELINE

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T Tadano
DESIGNED
M Howard / A Vogenthaler
DRAWN
A Robertson
CHECKED
TECH. APPR.
APPROVED
SIGNATURE/INITIAL - TITLE
FARMINGTON, NM 2017-12-07

REACH 21 PIPELINE

PLAN & PROFILE
STA 48+00 To 58+00

SHEET C-3
SHEET of

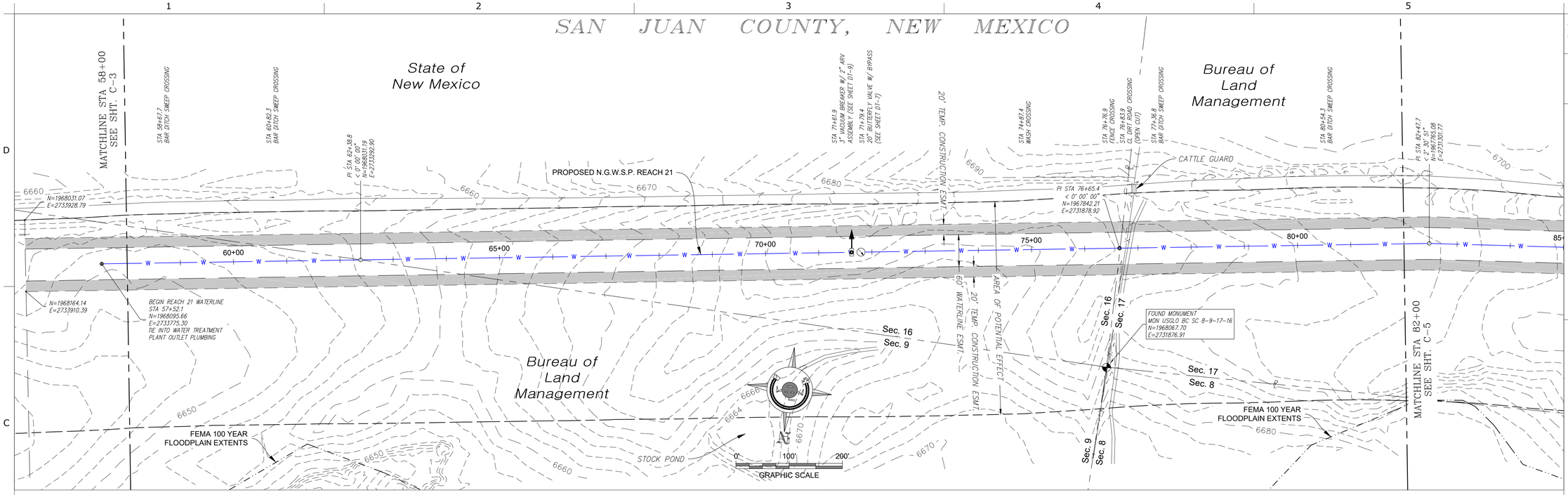
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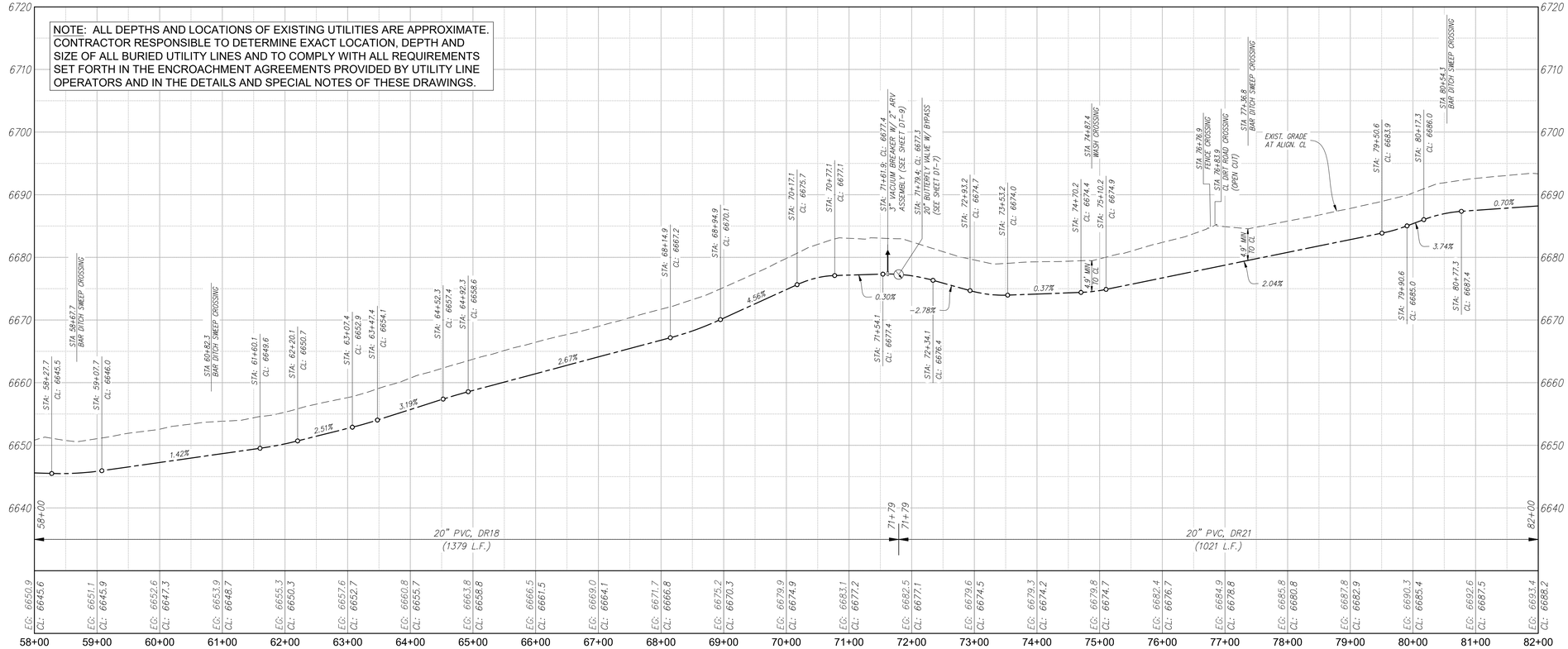
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PLAN VIEW
20" WATERLINE

NOTE: ALL DEPTHS AND LOCATIONS OF EXISTING UTILITIES ARE APPROXIMATE. CONTRACTOR RESPONSIBLE TO DETERMINE EXACT LOCATION, DEPTH AND SIZE OF ALL BURIED UTILITY LINES AND TO COMPLY WITH ALL REQUIREMENTS SET FORTH IN THE ENCROACHMENT AGREEMENTS PROVIDED BY UTILITY LINE OPERATORS AND IN THE DETAILS AND SPECIAL NOTES OF THESE DRAWINGS.



PROFILE VIEW 20" WATERLINE
SCALE: HORIZ. 1" = 100' ; VERT. 1" = 10'

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CUTTER LATERAL - REACH 21
WATER PIPELINE

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REACH 21 PIPELINE

PLAN & PROFILE
STA 58+00 To 82+00

SHEET C-4
SHEET of

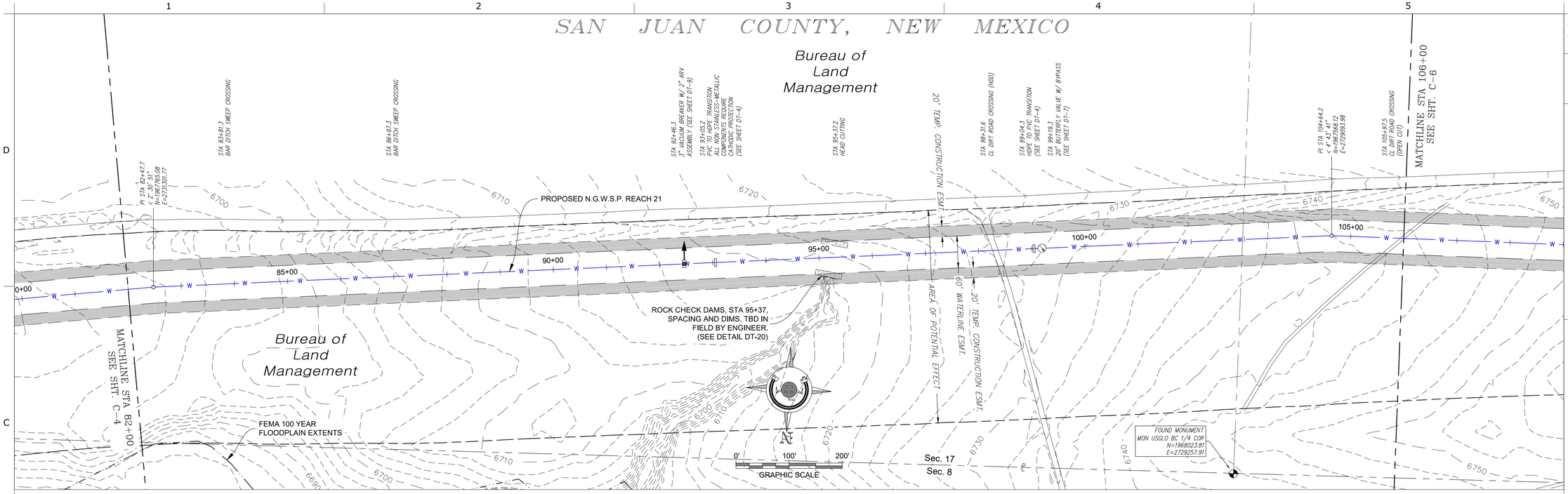
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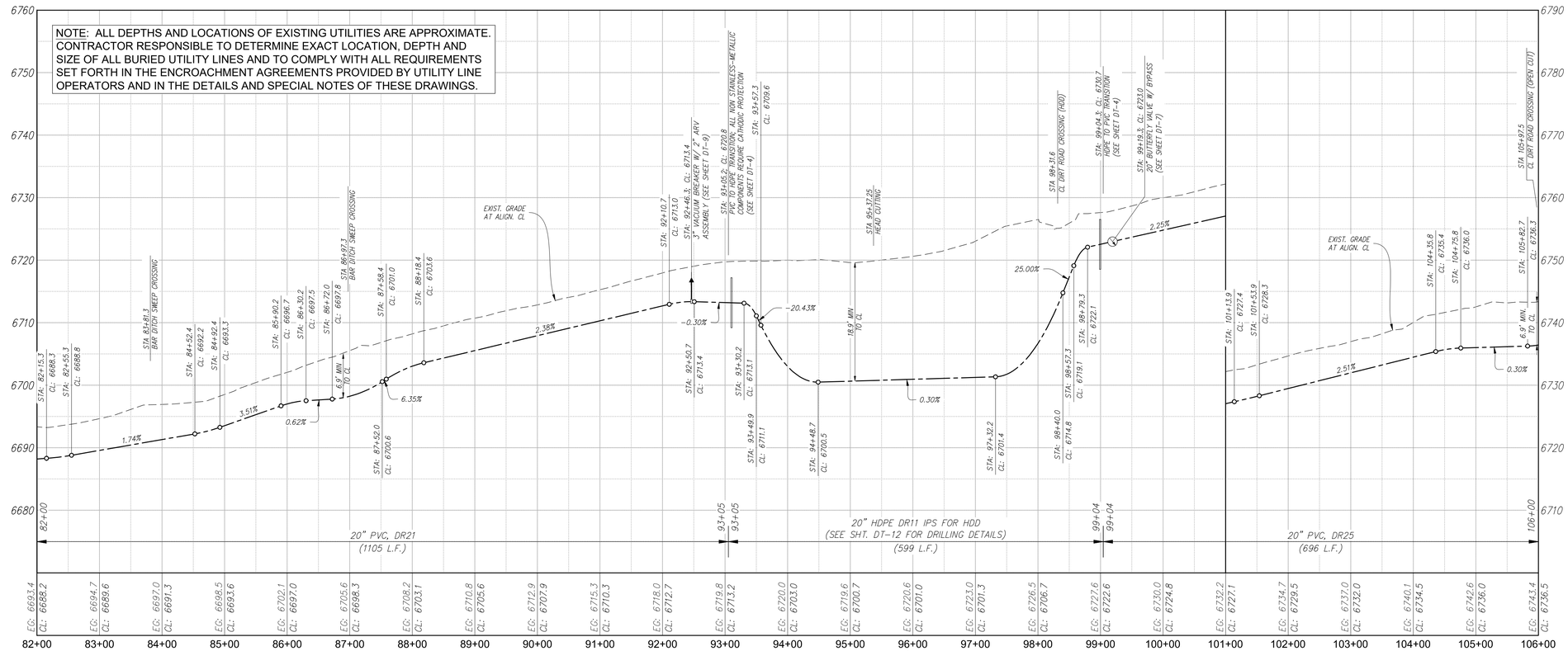
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PLAN VIEW
20" WATERLINE



PROFILE VIEW 20" WATERLINE
SCALE: HORIZ. 1" = 100' ; VERT. 1" = 10'

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REACH 21 PIPELINE

PLAN & PROFILE STA 82+00 To 106+00

SHEET C-5

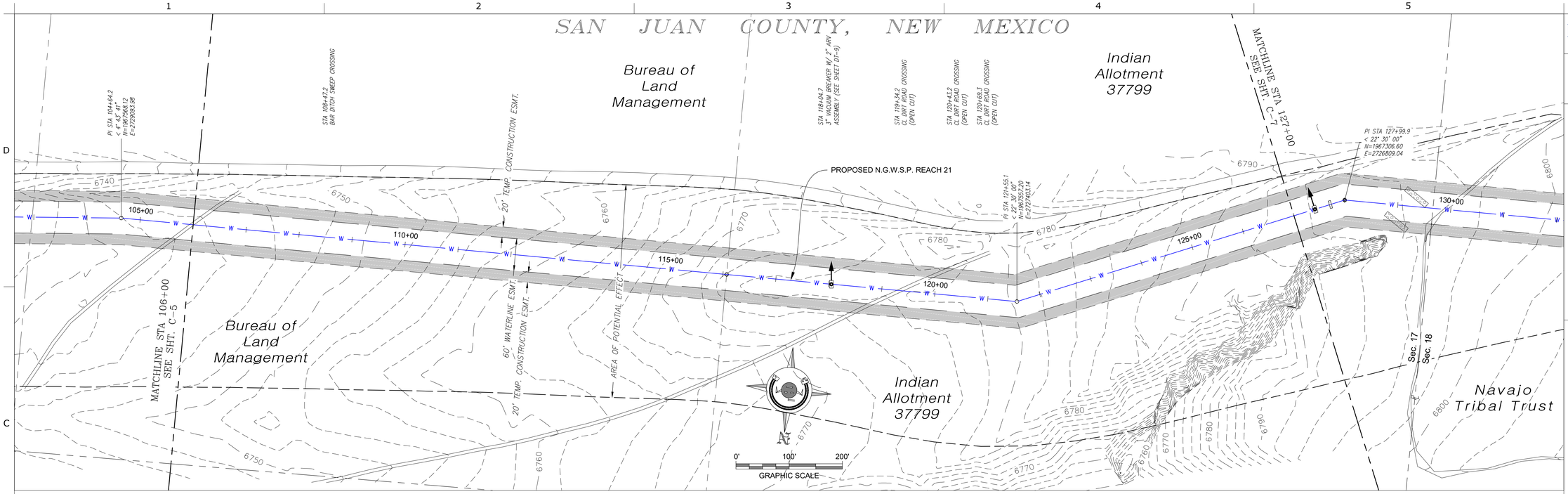
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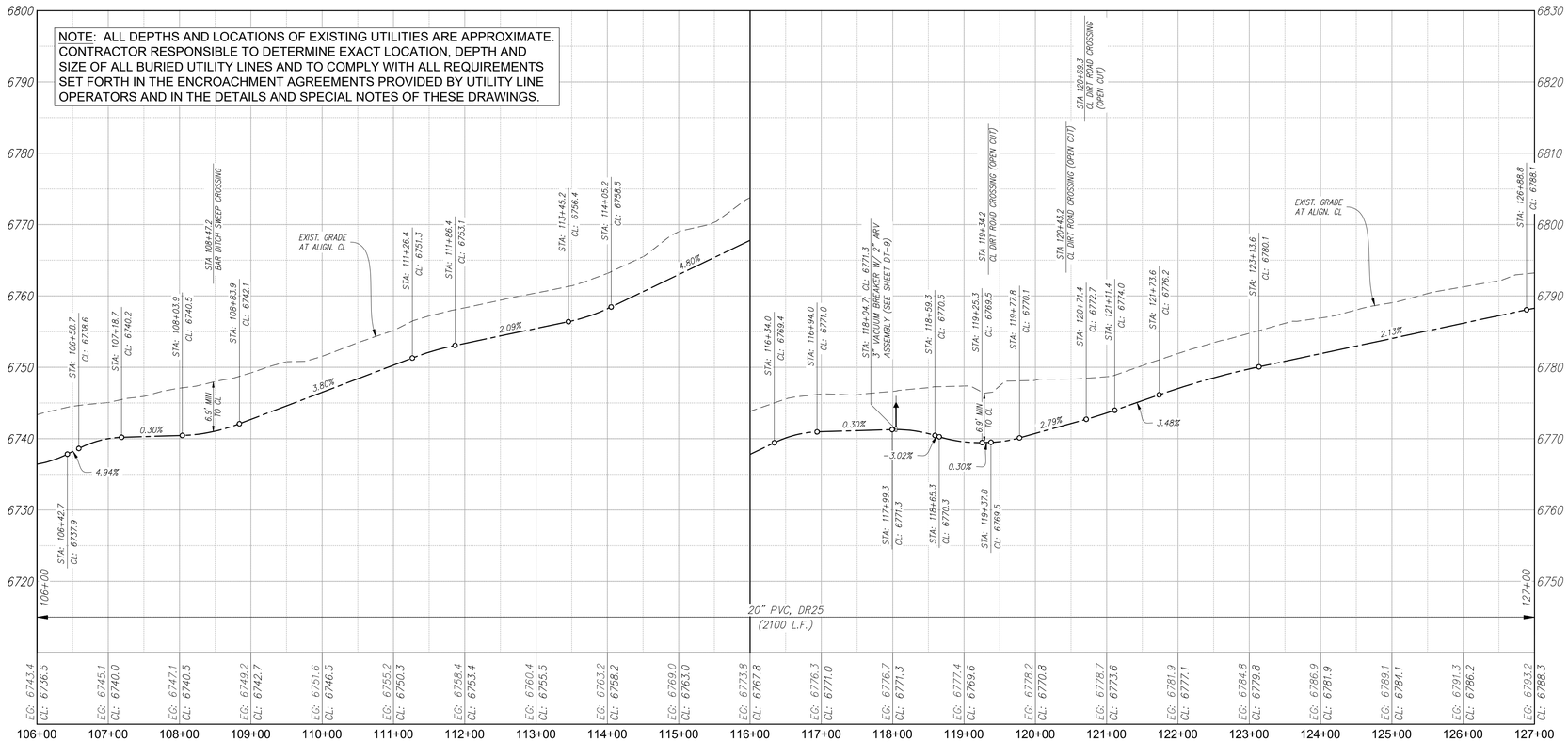
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PLAN VIEW
20" WATERLINE

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PROFILE VIEW 20" WATERLINE
SCALE: HORIZ. 1" = 100' ; VERT. 1" = 10'

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CUTTER LATERAL - REACH 21 WATER PIPELINE

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ADMIN APPROVAL TITLE
FARMINGTON, NM 2017-12-07

REACH 21 PIPELINE

PLAN & PROFILE STA 106+00 To 127+00

SHEET C-6

SHEET of

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Indian Allotment 37799

Navajo Tribal Trust

PROPOSED N.G.W.S.P. REACH 21

STA 127+41.4 3" VACUUM BREAKER W/ 2" ARV ASSEMBLY (SEE SHEET DT-9)

STA 127+71.7 PVC TO HDPE TRANSITION (SEE SHEET DT-4)

PI STA 127+99.9 < 22° 30' 00" N=1967306.60 E=2726809.04

STA 129+92.2 HEAD CUTTING

STA 132+57.9 HDPE TO PVC TRANSITION (SEE SHEET DT-4)

20' TEMP. CONSTRUCTION ESMT.

60' WATERLINE ESMT.

20' TEMP. CONSTRUCTION ESMT.

AREA OF POTENTIAL EFFECT

ROCK CHECK DAMS, STA 129+92, SPACING AND DIMS. TBD IN FIELD BY ENGINEER. (SEE DETAIL DT-20)

STA 146+02.1 CL DIRT ROAD CROSSING (OPEN CUT)

STA 146+64.3 CL DIRT ROAD CROSSING (OPEN CUT)

4 1/2" O.D. GASLINE CROSSING W/ CASING (2'-4" BURY) OWNER: ENTERPRISE (OPEN CUT) (SEE SHEET DT-5)

PI STA 147+46.4 < 3° 23' 37" N=1967294.03 E=2724662.61

APPROX. STA 147+64 TO STA 147+84 20' GASLINE CROSSING (OPEN CUT) 36" Ø, PVC DR25 CASING CENTERED ON GASLINE CROSSING (SEE SHEET DT-5)

STA 149+40.6 3" VACUUM BREAKER W/ 2" ARV ASSEMBLY (SEE SHEET DT-9)

STA 149+58.1 20" BUTTERFLY VALVE W/ BYPASS (SEE SHEET DT-7)

STA 150+66.4 WASH CROSSING

PI STA 153+31.3 < 4° 45' 12" N=1967255.63 E=2724278.91

N=1967236.96 E=2724756.41

N=1967256.90 E=2724755.10

N=1967295.75 E=2724431.97

N=1967315.70 E=2724430.66

MATCHLINE STA 127+00 SEE SHT. C-6

MATCHLINE STA 151+00 SEE SHT. C-9

Sec. 17 Sec. 18

Navajo Tribal Trust

NOTE:
THIS SHEET CONTAINS WORK IN THE VICINITY OF A **"CULTURALLY SENSITIVE AREA"**, SEE TECHNICAL SPECIFICATION BASIC REQUIREMENTS 01 00 00. ENGINEER MUST BE NOTIFIED AT LEAST FIVE (5) WORKING DAYS PRIOR TO ANY GROUND DISTURBING ACTIVITIES WITHIN 100 FEET OF SITE.

GRAPHIC SCALE 0' 100' 200'

PLAN VIEW
20" WATERLINE

NOTE: ALL DEPTHS AND LOCATIONS OF EXISTING UTILITIES ARE APPROXIMATE. CONTRACTOR RESPONSIBLE TO DETERMINE EXACT LOCATION, DEPTH AND SIZE OF ALL BURIED UTILITY LINES AND TO COMPLY WITH ALL REQUIREMENTS SET FORTH IN THE ENCROACHMENT AGREEMENTS PROVIDED BY UTILITY LINE OPERATORS AND IN THE DETAILS AND SPECIAL NOTES OF THESE DRAWINGS.

EXIST. GRADE AT ALIGN. CL

STA: 127+41.4; CL: 6788.6 3" VACUUM BREAKER W/ 2" ARV ASSEMBLY (SEE SHEET DT-9)

STA: 127+71.7; CL: 6795.7 PVC TO HDPE TRANSITION (SEE SHEET DT-4)

STA: 128+35.0 CL: 6781.9

STA: 129+92.2 HEAD CUTTING

STA: 131+69.8 CL: 6782.7

STA: 132+11.5 CL: 6793.1

STA: 132+32.9 CL: 6796.1

STA: 132+57.9; CL: 6802.7 HDPE TO PVC TRANSITION (SEE SHEET DT-4)

STA: 134+00.4 CL: 6800.9

STA: 134+40.4 CL: 6802.1

STA: 137+12.3 CL: 6811.2

STA: 139+32.3 CL: 6814.8

4.9' MIN. TO CL

-0.30% -25.00% 25.00% 2.88% 3.33% 2.62%

STA: 127+48.8 CL: 6788.6

STA: 127+96.7 CL: 6788.5

STA: 128+20.6 CL: 6785.5

STA: 129+47.1 CL: 6768.5

27.0' MIN. TO CL

STA: 130+63.6 CL: 6769.3

0.66%

20" PVC, DR25 (72 L.F.)

127+00

127+72

20" HDPE DR11 IPS FOR HDD (SEE SHT. DT-13 FOR DRILLING DETAILS) (486 L.F.)

132+58

132+58

EXIST. GRADE AT ALIGN. CL

STA: 139+07.0 CL: 6816.7

STA: 139+47.0 CL: 6818.0

STA: 140+04.2 CL: 6820.0

STA: 140+44.2 CL: 6821.2

STA: 143+48.0 CL: 6828.3

STA: 144+08.0 CL: 6829.9

STA: 146+02.1 CL DIRT ROAD CROSSING (OPEN CUT)

STA 146+64.3 CL DIRT ROAD CROSSING (OPEN CUT)

4 1/2" O.D. GASLINE CROSSING W/ CASING (2'-4" BURY) (WATER DIVERSION) (OPEN CUT) (SEE SHEET DT-5)

2.0' MIN. CLR. TO CASING

STA: 148+46.6 CL: 6838.1

STA: 149+40.6; CL: 6840.6 3" VACUUM BREAKER W/ 2" ARV ASSEMBLY (SEE SHEET DT-9)

STA: 149+58.1; CL: 6840.4 20" BUTTERFLY VALVE W/ BYPASS (SEE SHEET DT-7)

STA: 150+42.3 CL: 6838.0

STA: 150+66.4 WASH CROSSING

6.9' MIN. TO CL

2.91% 2.35% 3.60% 0.71% 3.50% -3.11%

STA: 145+92.2 CL: 6835.3

STA: 146+32.2 CL: 6836.0

STA: 148+98.3 CL: 6839.9

STA: 149+78.3 CL: 6840.0

APPROX. 147+64

APPROX. 147+84

36"ø, DR25 PVC CASING (SEE SHEET DT-5) (20 L.F.)

20" PVC, DR25 (1842 L.F.)

151+00

EG: 6792.2 CL: 6788.3 | EG: 6795.1 CL: 6788.4 | EG: 6795.9 CL: 6770.7 | EG: 6796.9 CL: 6768.8 | EG: 6798.8 CL: 6771.0 | EG: 6800.3 CL: 6790.2 | EG: 6802.9 CL: 6798.0 | EG: 6805.8 CL: 6800.9 | EG: 6809.0 CL: 6804.1 | EG: 6812.5 CL: 6807.4 | EG: 6815.9 CL: 6810.8 | EG: 6818.8 CL: 6813.9 | EG: 6821.4 CL: 6816.5 | EG: 6824.8 CL: 6819.9 | EG: 6827.4 CL: 6822.5 | EG: 6829.8 CL: 6824.9 | EG: 6832.2 CL: 6827.2 | EG: 6834.7 CL: 6829.7 | EG: 6837.6 CL: 6832.6 | EG: 6840.6 CL: 6835.5 | EG: 6843.0 CL: 6836.5 | EG: 6844.5 CL: 6837.2 | EG: 6846.6 CL: 6839.9 | EG: 6848.1 CL: 6839.3 | EG: 6844.7 CL: 6837.5

127+00 128+00 129+00 130+00 131+00 132+00 133+00 134+00 135+00 136+00 137+00 138+00 139+00 140+00 141+00 142+00 143+00 144+00 145+00 146+00 147+00 148+00 149+00 150+00 151+00

PROFILE VIEW 20" WATERLINE
SCALE: HORIZ. 1" = 100' ; VERT. 1" = 10'

RECLAMATION Managing Water in the West

SMA Engineering • Environmental Surveying

ALWAYS THINK SAFETY

U.S. DEPARTMENT OF THE INTERIOR BUREAU OF RECLAMATION

NAVAJO-GALLUP WATER SUPPLY PROJECT NEW MEXICO

CUTTER LATERAL - REACH 21 WATER PIPELINE

Preliminary Draft For Distribution Not For Construction

NO.	DATE	REVISION	BY	APVD

T Tadano DESIGNED
M Howard / A Vogenthaler DRAWN
A Robertson CHECKED
TECH. APPR.
APPROVED
SIGNATURE(S) - TITLE
FARMINGTON, NM 2017-12-07

REACH 21 PIPELINE

PLAN & PROFILE STA 127+00 To 151+00

SHEET C-7

SHEET of

DATE AND TIME PLOTTED 12/7/2017 PLOTTED BY atv

CAD SYSTEM AUTOCAD CAD FILENAME Reach 21 PnPs.dwg

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SAN JUAN COUNTY, NEW MEXICO

Navajo Tribal Trust

PROPOSED N.G.W.S.P. REACH 21

STA: 158+87 TO STA: 159+27
40' ROAD CROSSING (OPEN CUT)
36" Ø, 0.25" WALL STEEL CASING
ALL NON STAINLESS-METTALIC COMPONENTS REQUIRE CATHODIC PROTECTION
(SEE SHEET DT-6)

APPROX. STA 168+44 TO STA 168+64
20' GASLINE CROSSING (OPEN CUT)
36" Ø, DR25 PVC CASING
CENTERED ON GASLINE CROSSING
(SEE SHEET DT-5)

MATCHLINE STA 151+00 SEE SHT. C-7

MATCHLINE STA 173+00 SEE SHT. C-9

20' TEMP. CONSTRUCTION ESMT.

60' WATERLINE ESMT.

AREA OF POTENTIAL EFFECT

0' 100' 200'
GRAPHIC SCALE

NOTE:
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PLAN VIEW
20" WATERLINE

NOTE: ALL DEPTHS AND LOCATIONS OF EXISTING UTILITIES ARE APPROXIMATE. CONTRACTOR RESPONSIBLE TO DETERMINE EXACT LOCATION, DEPTH AND SIZE OF ALL BURIED UTILITY LINES AND TO COMPLY WITH ALL REQUIREMENTS SET FORTH IN THE ENCROACHMENT AGREEMENTS PROVIDED BY UTILITY LINE OPERATORS AND IN THE DETAILS AND SPECIAL NOTES OF THESE DRAWINGS.

20" PVC, DR25
(2200 L.F.)

PROFILE VIEW 20" WATERLINE
SCALE: HORIZ. 1" = 100' ; VERT. 1" = 10'

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NAVAJO-GALLUP WATER SUPPLY PROJECT
U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
NEW MEXICO

CUTTER LATERAL - REACH 21
WATER PIPELINE

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T Tadano — DESIGNED
M Howard / A Vogenthaler — DRAWN
A Robertson — CHECKED
TECH. APPR.
APPROVED
SIGNATURE TITLE
FARMINGTON, NM 2017-12-07

REACH 21 PIPELINE

PLAN & PROFILE STA 151+00 To 173+00

SHEET C-8
SHEET of

DATE AND TIME PLOTTED 12/7/17
PLOTTED BY atw

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CAD FILENAME Reach 21 PnPs.dwg

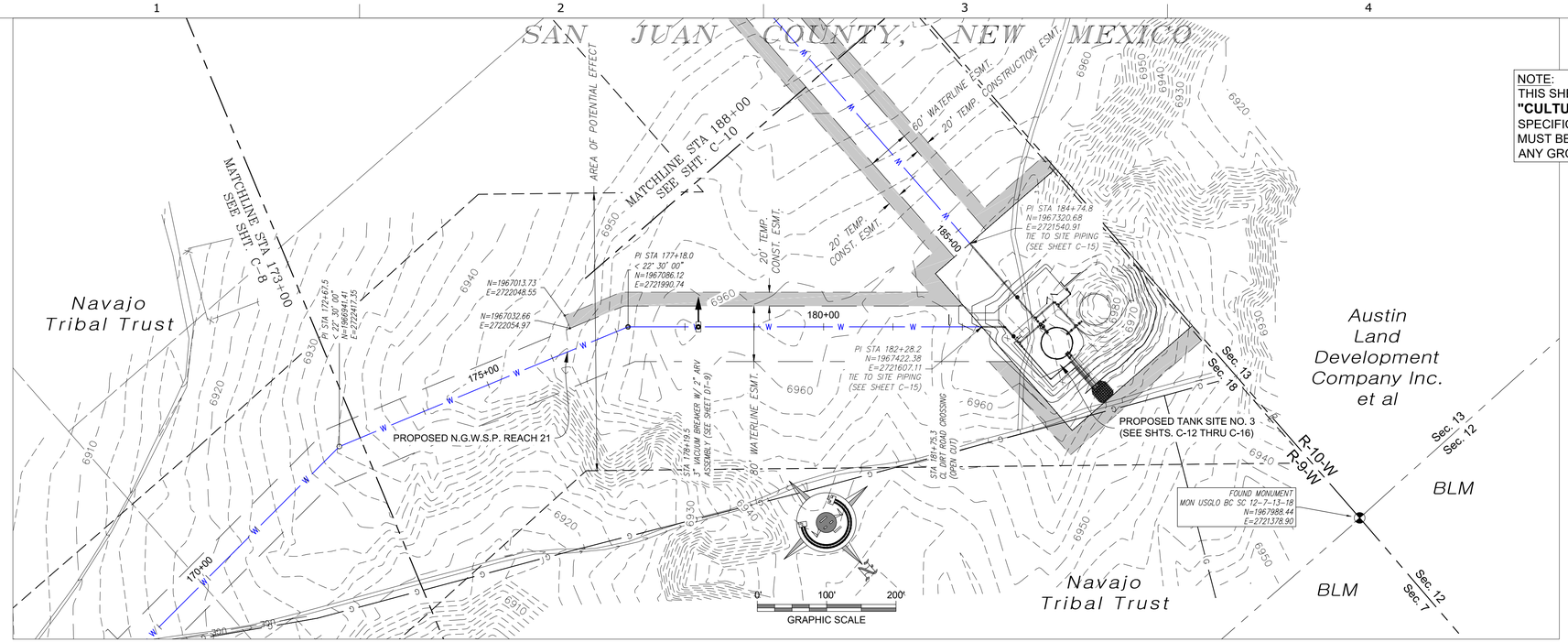
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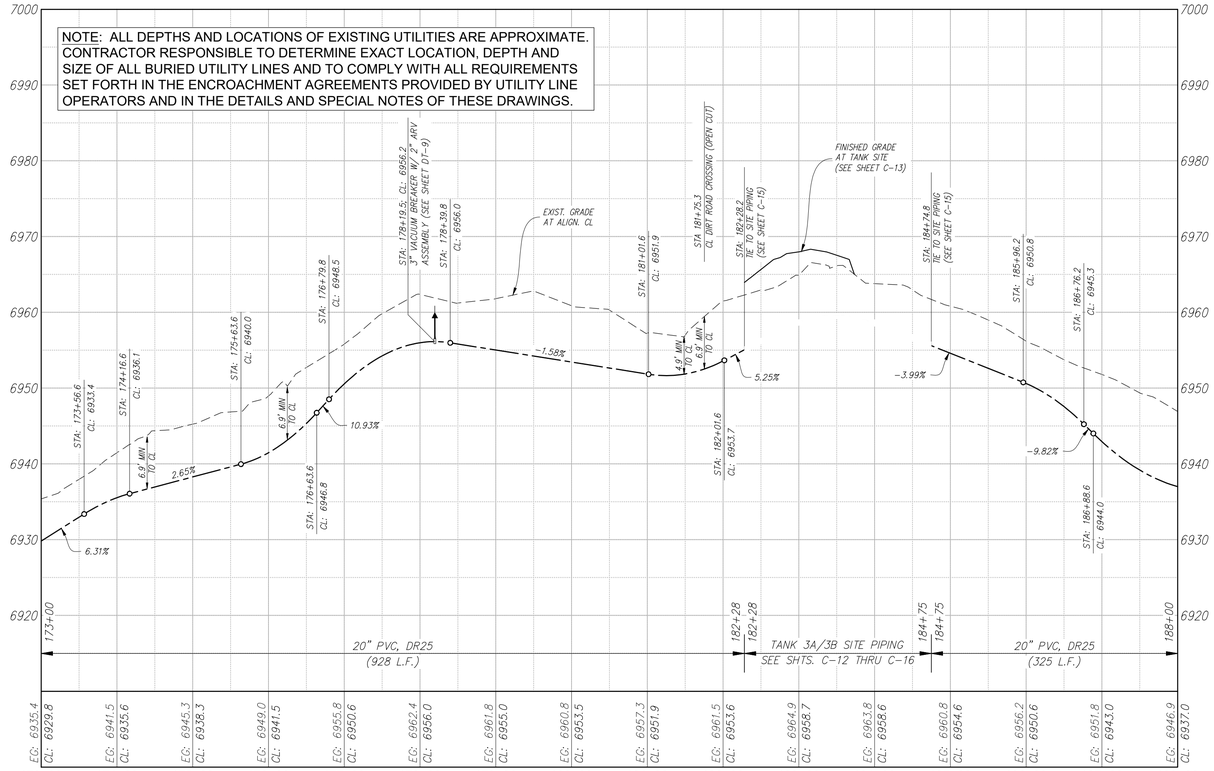
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PLAN VIEW
20" WATERLINE



PROFILE VIEW 20" WATERLINE
SCALE: HORIZ. 1" = 100' ; VERT. 1" = 10'

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BUREAU OF RECLAMATION
NAVAJO-GALLUP WATER SUPPLY PROJECT
NEW MEXICO

CUTTER LATERAL - REACH 21
WATER PIPELINE

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NO.	DATE	REVISION	BY	APVD

T Tadano
DESIGNED
M Howard / A Vogenthaler
DRAWN
A Robertson
CHECKED
TECH. APPR.
APPROVED
(WATER DIVISION) - TITLE
FARMINGTON, NM 2017-12-07

REACH 21 PIPELINE

PLAN & PROFILE STA 173+00 To 188+00

SHEET C-9

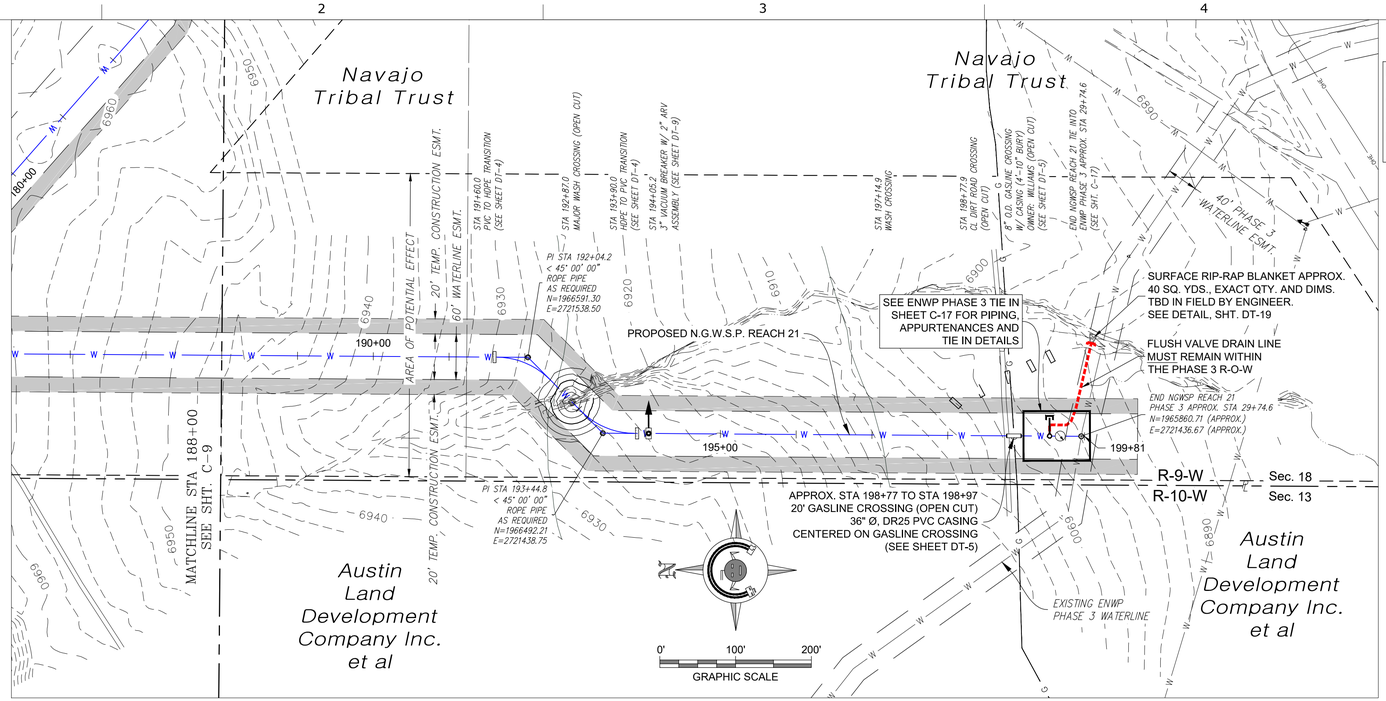
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DATE AND TIME PLOTTED
12/7/2017
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arv

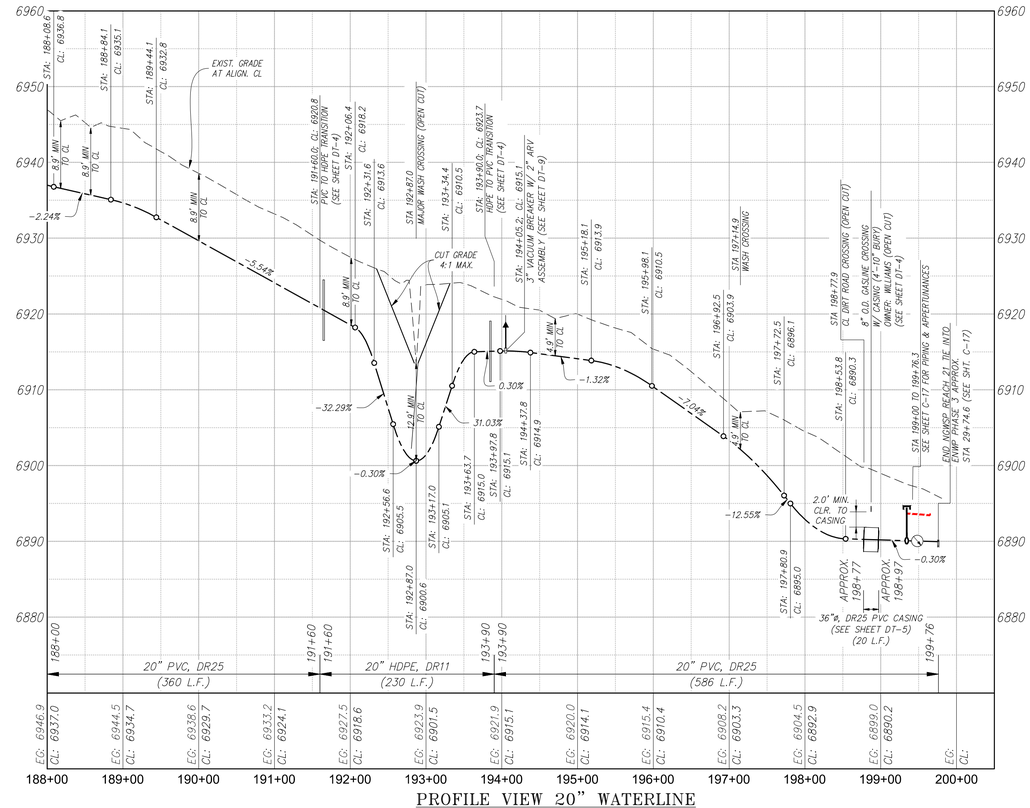
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PLAN VIEW
20" WATERLINE



PROFILE VIEW 20" WATERLINE
SCALE: HORIZ. 1" = 100' ; VERT. 1" = 10'

NOTE:
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NOTES: 1. LOCATION OF EXISTING ENWP PHASE 3 PIPING IS APPROXIMATE.
2. ALL DEPTHS AND LOCATIONS OF EXISTING UTILITIES ARE APPROXIMATE. CONTRACTOR RESPONSIBLE TO DETERMINE EXACT LOCATION, DEPTH AND SIZE OF ALL BURIED UTILITY LINES AND TO COMPLY WITH ALL REQUIREMENTS SET FORTH IN THE ENCROACHMENT AGREEMENTS PROVIDED BY UTILITY LINE OPERATORS AND IN THE DETAILS AND SPECIAL NOTES OF THESE DRAWINGS.

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NAVAJO-GALLUP WATER SUPPLY PROJECT
NEW MEXICO

CUTTER LATERAL - REACH 21
WATER PIPELINE

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A Robertson
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SIGNATURE - TITLE
FARMINGTON, NM 2017-12-07

REACH 21 PIPELINE

PLAN & PROFILE STA 188+00 To 199+76.3

SHEET C-10

SHEET of

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SEC-4, T-25-N, R-9-W
BUREAU OF LAND MANAGEMENT

Bureau Of
Land Management

NOTES: 1. LOCATION OF EXISTING REACH 22 PIPING IS APPROXIMATE.
2. ALL DEPTHS AND LOCATIONS OF EXISTING UTILITIES ARE APPROXIMATE. CONTRACTOR RESPONSIBLE TO DETERMINE EXACT LOCATION, DEPTH AND SIZE OF ALL BURIED UTILITY LINES AND TO COMPLY WITH ALL REQUIREMENTS SET FORTH IN THE ENCROACHMENT AGREEMENTS PROVIDED BY UTILITY LINE OPERATORS AND IN THE DETAILS AND SPECIAL NOTES OF THESE DRAWINGS.

FLOW

N.G.W.S.P. REACH 22
TANK SITE NO.2
(BY OTHERS)

23093+00

BEGIN N.G.W.S.P. REACH 21 WATERLINE,
TIE INTO REACH 22 PIPING WITH
24" RESTRAINED FLANGE ADAPTOR. ALL
NON STAINLESS-METALLIC COMPONENTS
REQUIRE CATHODIC PROTECTION.
STATION EQUATION
REACH 21 STA: -0+21.4 =
REACH 22 STA: 23093+06.5
N=1973629.68 (APPROX.)
E=2735809.41 (APPROX.)

EXISTING 24" FLANGE

0+00

FLOW

20' TEMP.
CONST. ESMT.

60' WATERLINE EASEMENT

20' TEMP.
CONST. ESMT.

N.G.W.S.P. REACH 21
WATERLINE - 24" PVC DR25

6635 6634 6633 6632 6631 6630 6629 6628

Bureau Of
Land Management

N
0' 10' 20'
GRAPHIC SCALE

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BUREAU OF RECLAMATION
NAVAJO-GALLUP WATER SUPPLY PROJECT
NEW MEXICO

CUTTER LATERAL - REACH 21
WATER PIPELINE

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DESIGNED
M Howard / A Vogenthaler
DRAWN
A Robertson
CHECKED
TECH. APPR.
APPROVED
FARMINGTON, NM 2017-12-07

REACH 21 PIPELINE

REACH 22 TANK
SITE NO. 2 TIE IN

SHEET C-11

SHEET C-11

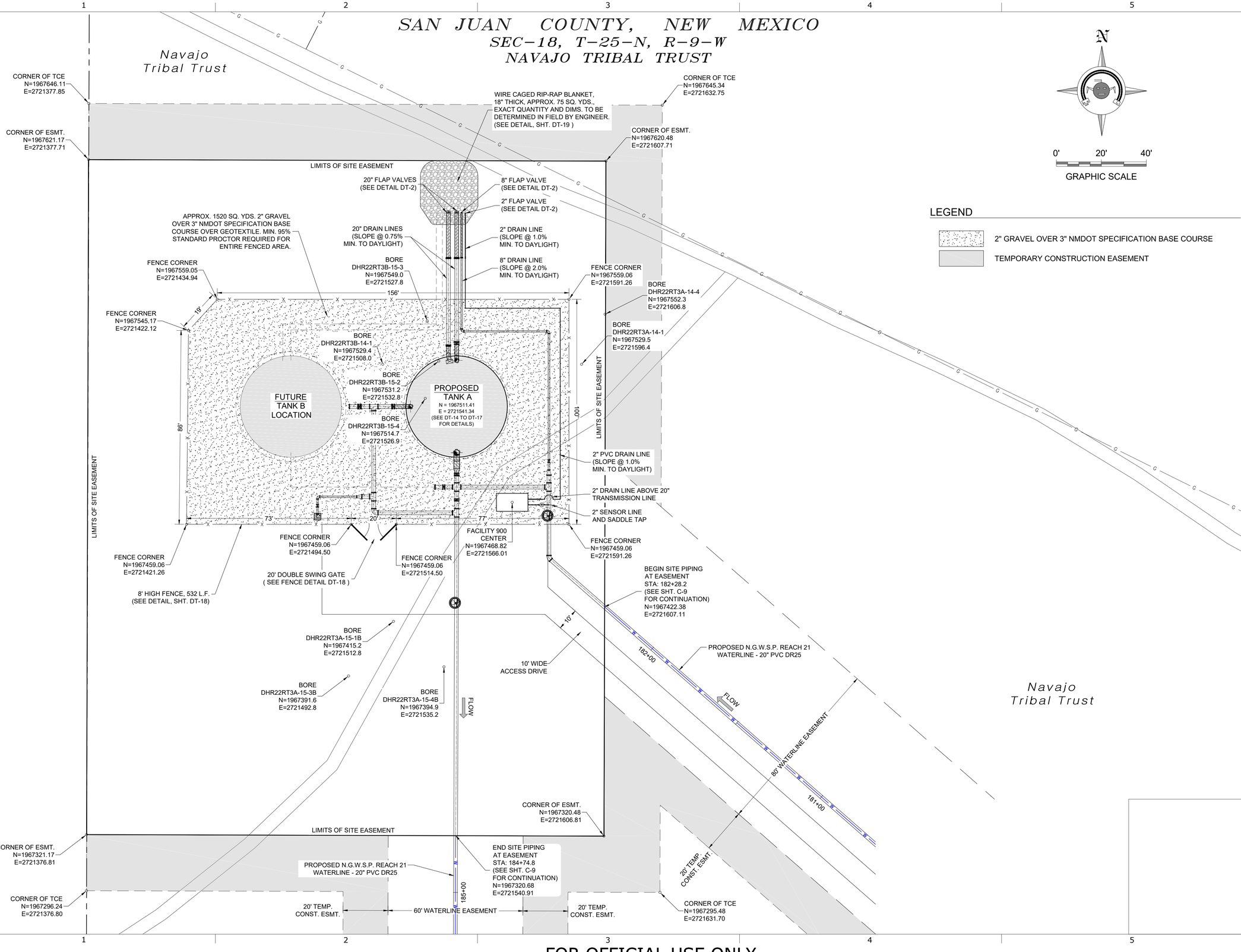
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SAN JUAN COUNTY, NEW MEXICO
SEC–18, T–25–N, R–9–W
NAVAJO TRIBAL TRUST



N

0' 20' 40'

GRAPHIC SCALE

LEGEND

- 2" GRAVEL OVER 3" NMDOT SPECIFICATION BASE COURSE
- TEMPORARY CONSTRUCTION EASEMENT

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NAVAJO-GALLUP WATER SUPPLY PROJECT
FARMINGTON, NEW MEXICO

CUTTER LATERAL - REACH 21
WATER PIPELINE

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T Tadano — DESIGNED
M Howard / A Vogenthaler — DRAWN
A Robertson — CHECKED
TECH. APPR.
APPROVED
ADMIN APPROVAL - TITLE

FARMINGTON, NM 2017-12-07

REACH 21 PIPELINE

REACH 21 TANK SITE NO. 3 SITE PLAN

SHEET C-12

SHEET of

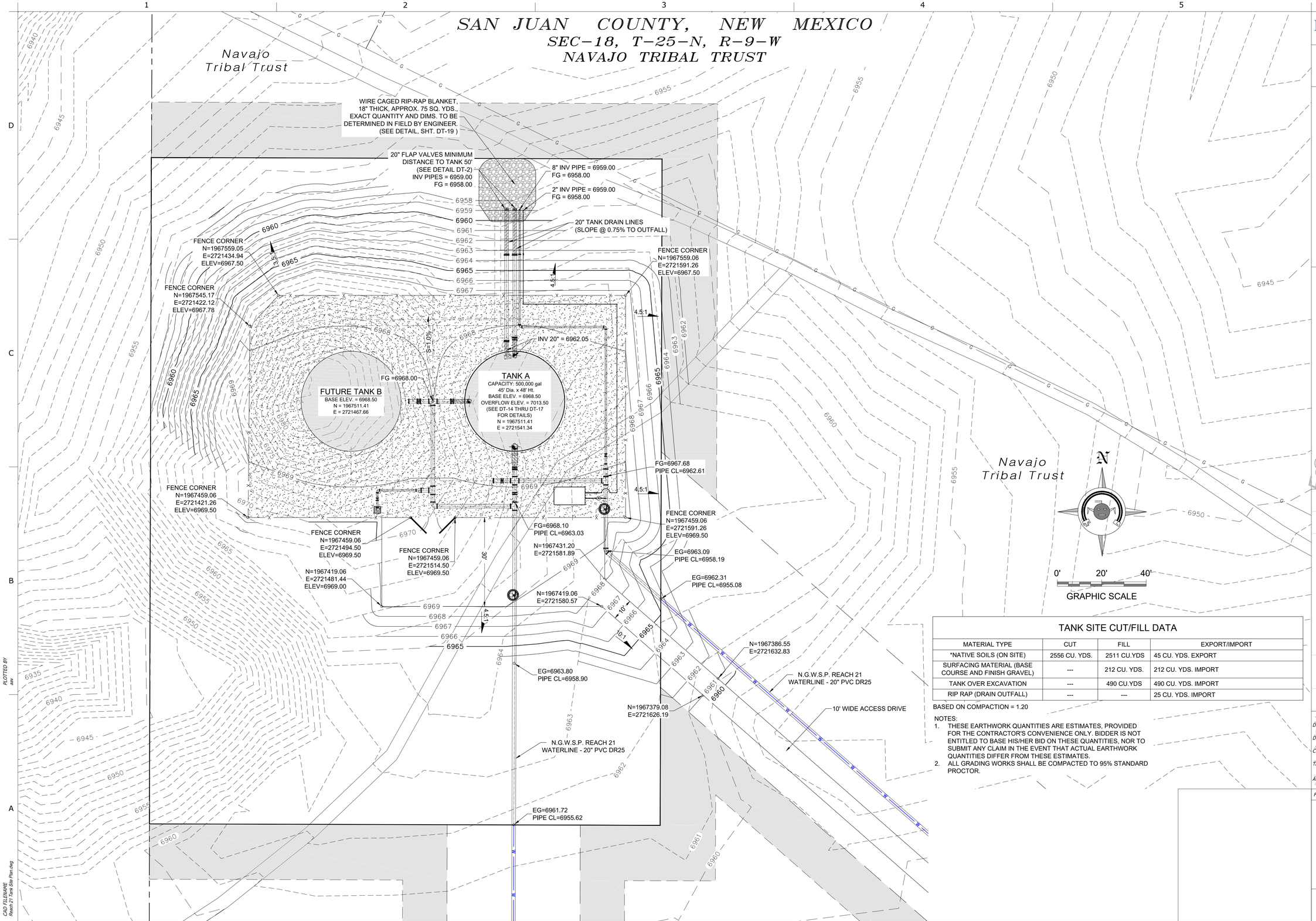
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SEC–18, T–25–N, R–9–W
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TANK SITE CUT/FILL DATA			
MATERIAL TYPE	CUT	FILL	EXPORT/IMPORT
*NATIVE SOILS (ON SITE)	2556 CU. YDS.	2511 CU.YDS	45 CU. YDS. EXPORT
SURFACING MATERIAL (BASE COURSE AND FINISH GRAVEL)	---	212 CU. YDS.	212 CU. YDS. IMPORT
TANK OVER EXCAVATION	---	490 CU.YDS	490 CU. YDS. IMPORT
RIP RAP (DRAIN OUTFALL)	---	---	25 CU. YDS. IMPORT

BASED ON COMPACTION = 1.20

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

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NAVAJO-GALLUP WATER SUPPLY PROJECT
NEW MEXICO

CUTTER LATERAL - REACH 21
WATER PIPELINE

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DRAWN
A Robertson
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REACH 21 PIPELINE

REACH 21 TANK
SITE NO. 3
GRADING PLAN

SHEET C-13

SHEET of

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SEC–18, T–25–N, R–9–W
NAVAJO TRIBAL TRUST

Navajo Tribal Trust

3 - FIBER ROLLS, EXACT QUANTITY AND SPACING TO BE DETERMINED IN FIELD BY ENGINEER. (APPROX. 1900 L.F.) (SEE DETAIL, SHT. DT-20)

FUTURE TANK B

TANK A

FIBER ROLL, EXACT QUANTITY AND SPACING TO BE DETERMINED IN FIELD BY ENGINEER. (APPROX. 55 L.F.) (SEE DETAIL, SHT. DT-20)

N.G.W.S.P. REACH 21 WATERLINE - 20" PVC DR25

3 - FIBER ROLLS, EXACT QUANTITY AND SPACING TO BE DETERMINED IN FIELD BY ENGINEER. (APPROX. 255 L.F.) (SEE DETAIL, SHT. DT-20)

FIBER ROLL, EXACT QUANTITY AND SPACING TO BE DETERMINED IN FIELD BY ENGINEER. (APPROX. 170 L.F.) (SEE DETAIL, SHT. DT-20)

N.G.W.S.P. REACH 21 WATERLINE - 20" PVC DR25

Navajo Tribal Trust

N

0' 20' 40'

GRAPHIC SCALE

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NAVAJO-GALLUP WATER SUPPLY PROJECT
NEW MEXICO

CUTTER LATERAL - REACH 21

WATER PIPELINE

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DESIGNED
M Howard / A Vogenthaler
DRAWN
A Robertson
CHECKED
TECH. APPR.
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ADMIN APPROVAL TITLE

FARMINGTON, NM 2017-12-07

REACH 21 PIPELINE

REACH 21 TANK SITE
NO. 3 STORMWATER
BMP PLAN

SHEET C-14

SHEET of

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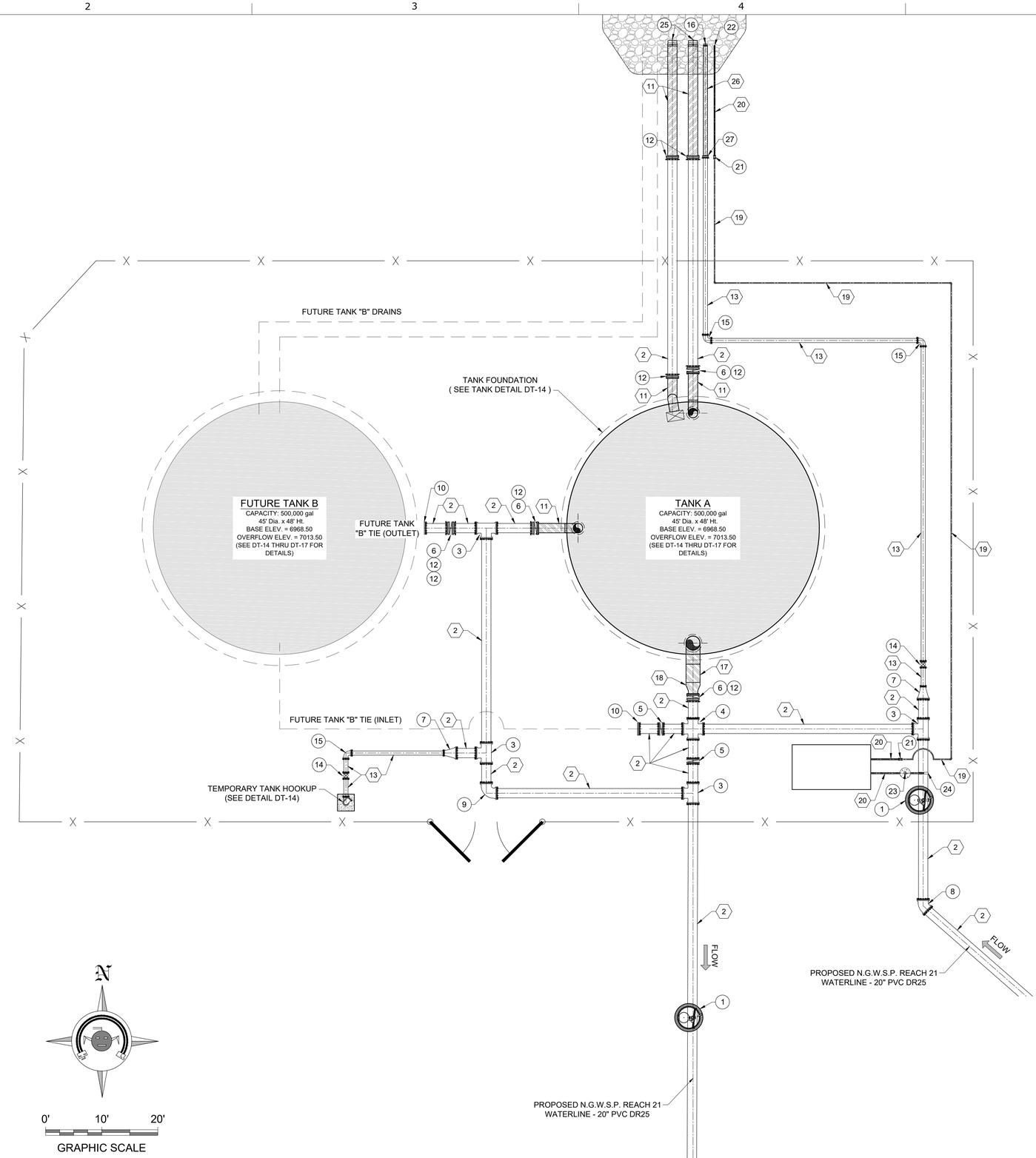
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KEYED NOTES - REACH 21 TANK SITE	
Item No.	Description
1	3" VACUUM BREAKER W/ 2" AIR RELEASE VALVE (SEE DETAIL DT-9)
2	20" PVC DR25 PIPE
3	20" MJ x MJ TEE, D.I. 350 psi
4	20" MJ x MJ CROSS, D.I. 350 psi
5	20" MJ x MJ BUTTERFLY VALVE, 150 psi (SEE DETAIL DT-8)
6	20" FL x FL BUTTERFLY VALVE, 150 psi (SEE DETAIL DT-8)
7	20" x 8" MJ x MJ CONCENTRIC REDUCER, D.I. 350 psi
8	20" MJ x MJ 45° ELL, D.I. 350 psi
9	20" MJ x MJ 90° ELL, D.I. 350 psi
10	20" MJ END CAP, D.I. 350 psi
11	20" STEEL PIPE, STANDARD WALL
12	20" FLANGE ADAPTOR, 165 psi
13	8" PVC DR18 PIPE
14	8" MJ x MJ GATE VALVE, 350 psi (SEE DETAIL DT-8)
15	8" MJ x MJ 90° ELL, D.I. 350 psi
16	8" FLAP VALVE (SEE DETAIL DT-2)
17	32" STEEL PIPE, STANDARD WALL
18	32" x 20" STEEL REDUCER, STANDARD WALL
19	2" PVC PIPE, SCHEDULE 80
20	2" STEEL PIPE, STANDARD WALL
21	2" RESTRAINT COUPLING, FBE - COATED, SS 304 BOLTS, SMITH BLAIR MAXI-GRIP EZ-W, 200 psi, OAE
22	2" FLAP VALVE (SEE DETAIL DT-2)
23	2" CURB STOP, 300 psi
24	20" x 2" SS 304 TAPPING SADDLE, 250 psi
25	20" FLAP VALVE (SEE DETAIL DT-2)
26	8" STEEL PIPE, STANDARD WALL
27	8" FLANGE ADAPTOR, 165 psi

NOTES:

1. CONTRACTOR SHALL FIELD SURVEY ELEVATION OF OVERFLOW WEIR OF TANK A AND ENSURE OVERFLOW WEIR ELEVATION MATCHES ENWP PHASE 3 DZ REGULATING (SE) TANK OVERFLOW ELEVATION (WITHIN A TOLERANCE OF ±1/2" INCH).
2. PROVIDE TANK SUB-FOUNDATIONS, OVER-EXCAVATION, AND SITE GRADING IN ACCORDANCE WITH GEOTECHNICAL REPORT AND DT-14.
3. PROVIDE TANK FOUNDATION IN ACCORDANCE WITH GEOTECHNICAL REPORT AND TANK MANUFACTURER'S PE-SEALED FOUNDATION DESIGN.
4. NO HIGH SPOTS PERMITTED ON SITE PIPING. ALL SITE PIPING (INCLUDING SENSOR LINES) SHALL SLOPE UP TOWARDS TANKS OR ARVS (MIN. 1%).
5. ALL MATERIALS, FITTINGS AND APPURTENANCES SHALL BE RATED TO AT LEAST 165 psi, UNLESS OTHERWISE NOTED.
6. ALL PIPE AND FITTINGS UNDERNEATH AND WITHIN 5' OF TANK FOUNDATIONS SHALL BE STEEL, AND SHALL BE SHOP WELDED, SHOP COATED, X-RAY TESTED AND PRESSURE TESTED PRIOR TO PLACING FOUNDATIONS. SHOP COATINGS SHALL BE APPLIED AFTER WELDING.
7. ALL VALVES AND STEEL-TO-PVC COUPLINGS AT TANKS SHALL BE LOCATED AT LEAST 5' FROM EDGES OF FOUNDATIONS.
8. ALL BURIED NON-STAINLESS STEEL PIPE AND FITTINGS SHALL BE COLD-APPLIED TAPE-WRAPPED, PER SPECIFICATIONS.
9. GLASS-FUSED STEEL TANKS: ALL 20-INCH STEEL PIPE AND FITTINGS SHALL BE FBE-COATED, INTERIOR AND EXTERIOR.
10. ALL BURIED DUCTILE IRON FITTINGS SHALL BE MJ.
11. ALL PRESSURE BEARING PIPES WITHIN SITE SHALL BE FULLY RESTRAINED. REFER TO DETAIL, SHEET DT-3.
12. FIELD LOCATE CONDUITS PER REVIEW WITH ELECTRICIAN.
13. TANK SITE NON-STAINLESS METALLIC COMPONENTS REQUIRE CATHODIC PROTECTION.



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NEW MEXICO

CUTTER LATERAL - REACH 21 WATER PIPELINE

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T Tadano
DESIGNED
M Howard / A Vogenthaler
DRAWN
A Robertson
CHECKED
TECH. APPR.
APPROVED
ADMIN APPROVAL - TITLE

FARMINGTON, NM 2017-12-07

REACH 21 PIPELINE

REACH 21 TANK
SITE NO. 3
PIPING PLAN

SHEET C-15

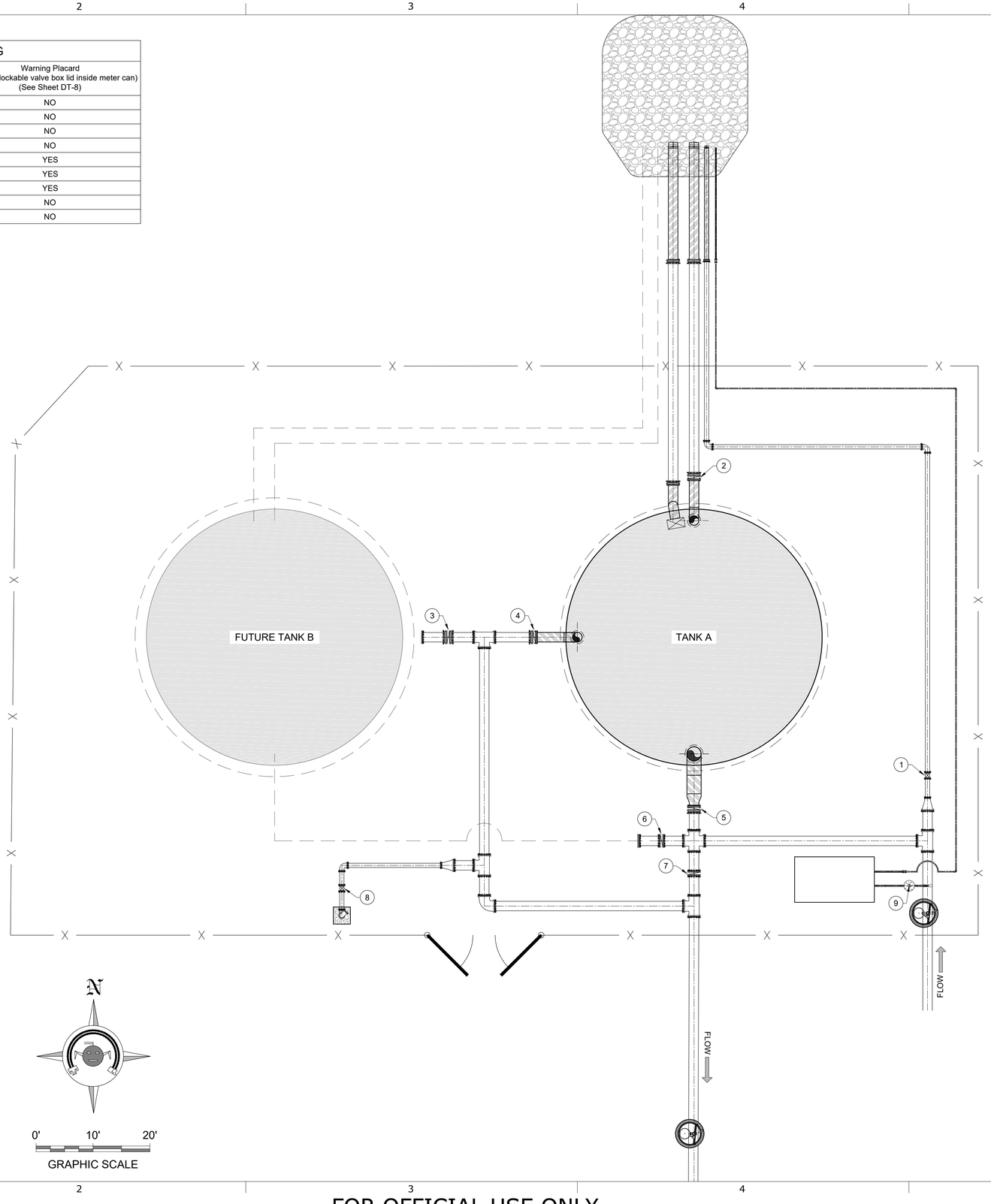
SHEET of

DATE AND TIME PLOTTED
12/7/17
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aav

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AUTOCAD
CAD FILENAME
Reach 21 Tank Site Plan.dwg

TANK SITE NUMBER 3 - VALVE NUMBERING					
Valve No.	Valve Size	Valve Type	Pipe Type	Description	Warning Placard (Requires lockable valve box lid inside meter can) (See Sheet DT-8)
1	8"	GV	PVC	MAIN LINE FLUSH VALVE	NO
2	20"	BFV	STEEL / PVC	TANK A FLOOR DRAIN	NO
3	20"	BFV	PVC	TANK B OUTLET	NO
4	20"	BFV	STEEL / PVC	TANK A OUTLET	NO
5	20"	BFV	STEEL / PVC	TANK A INLET	YES
6	20"	BFV	PVC	TANK B INLET	YES
7	20"	BFV	PVC	TANK A AND B BYPASS	YES
8	8"	GV	PVC	TEMPORARY TANK HOOK UP	NO
9	2"	CV	PVC	SENSOR LINE INLET	NO

NOTES:
1. REFERENCE SHEET DT-8 FOR SITE VALVE IDENTIFICATION AND WARNING PLACARD DETAILS.



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CUTTER LATERAL - REACH 21
WATER PIPELINE

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REACH 21 PIPELINE

REACH 21 TANK
SITE NO. 3 SITE
VALVE NUMBERS

SHEET C-16
SHEET of

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SAN JUAN COUNTY, NEW MEXICO
SEC-18, T-25-N, R-9-W
NAVAJO TRIBAL TRUST

REACH 21 WATERLINE EASEMENT

SEE SHT. C-10 FOR CONTINUATION

Navajo Tribal Trust

6897

6896

4" DR18 PVC

4" FLUSH DRAIN LINE MUST REMAIN WITHIN REACH 21 AND PHASE 3 R-O-W'S

4" 22.5° MJ BEND, DI

EXISTING PHASE 3 ISOLATION VALVE STA. 41+20, 1142 FT.

EXISTING 22" HDPE DR17 IPS

40' ENWP PHASE 3 WATERLINE EASEMENT

4" 45° MJ BEND, DI

4" DR18 PVC

4" 45° MJ BEND, DI

4" DR18 PVC

4" 90° MJ BEND, DI

4" DR18 PVC

6" BLIND FLANGE

4" DR18 PVC

22" ELECTROFUSION COUPLING

22" HDPE DR17 IPS

6895

10.0'

60' REACH 21 WATERLINE EASEMENT

4" FLUSH VALVE ASSEMBLY (SEE DETAIL DT-10)

20" DR25 PVC

20" DR25 PVC

20" BUTTERFLY VALVE W/ BYPASS (SEE DETAIL DT-7)

5.0'

20" 11.25° MJ BEND, DI

DR25 PVC | HDPE

20" DR25 PVC

20" MJ SLEEVE, DI

22" HDPE DR17 IPS

END NGWSP REACH 21
STA 199+76.0=
EXISTING PHASE 3
STA 29+74.6
N=1965861.19 (APPROX.)
E=2721433.83 (APPROX.)

22" DR15.5 HDPE TEE

14.0'

PROPOSED N.G.W.S.P. REACH 21 WATERLINE

8.0'

PVC TO HDPE TRANSITION

HDPE MJ ADAPTOR WITH STAINLESS BACKUP RING

20" x 22" REDUCER, HDPE DR17

22" HDPE DR17 IPS

10.0'

NOTES: 1. LOCATION OF EXISTING ENWP PHASE 3 PIPING IS APPROXIMATE.
2. ALL DEPTHS AND LOCATIONS OF EXISTING UTILITIES ARE APPROXIMATE. CONTRACTOR RESPONSIBLE TO DETERMINE EXACT LOCATION, DEPTH AND SIZE OF ALL BURIED UTILITY LINES AND TO COMPLY WITH ALL REQUIREMENTS SET FORTH IN THE ENCROACHMENT AGREEMENTS PROVIDED BY UTILITY LINE OPERATORS AND IN THE DETAILS AND SPECIAL NOTES OF THESE DRAWINGS.

ENWP PHASE 3 WATERLINE EASEMENT

22" ELECTROFUSION COUPLING

EXISTING ENWP PHASE 3 WATERLINE

EXISTING 22" HDPE DR17 IPS

EXISTING PHASE 3 ISOLATION VALVE STA. 25+78, 400 FT.

Navajo Tribal Trust

6896

Navajo Tribal Trust

6898

6897

REACH 21 WATERLINE EASEMENT

N

0' 3' 6'

GRAPHIC SCALE

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NEW MEXICO

CUTTER LATERAL - REACH 21

WATER PIPELINE

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REACH 21 PIPELINE

ENWP PHASE 3 TIE IN

SHEET C-17

SHEET of

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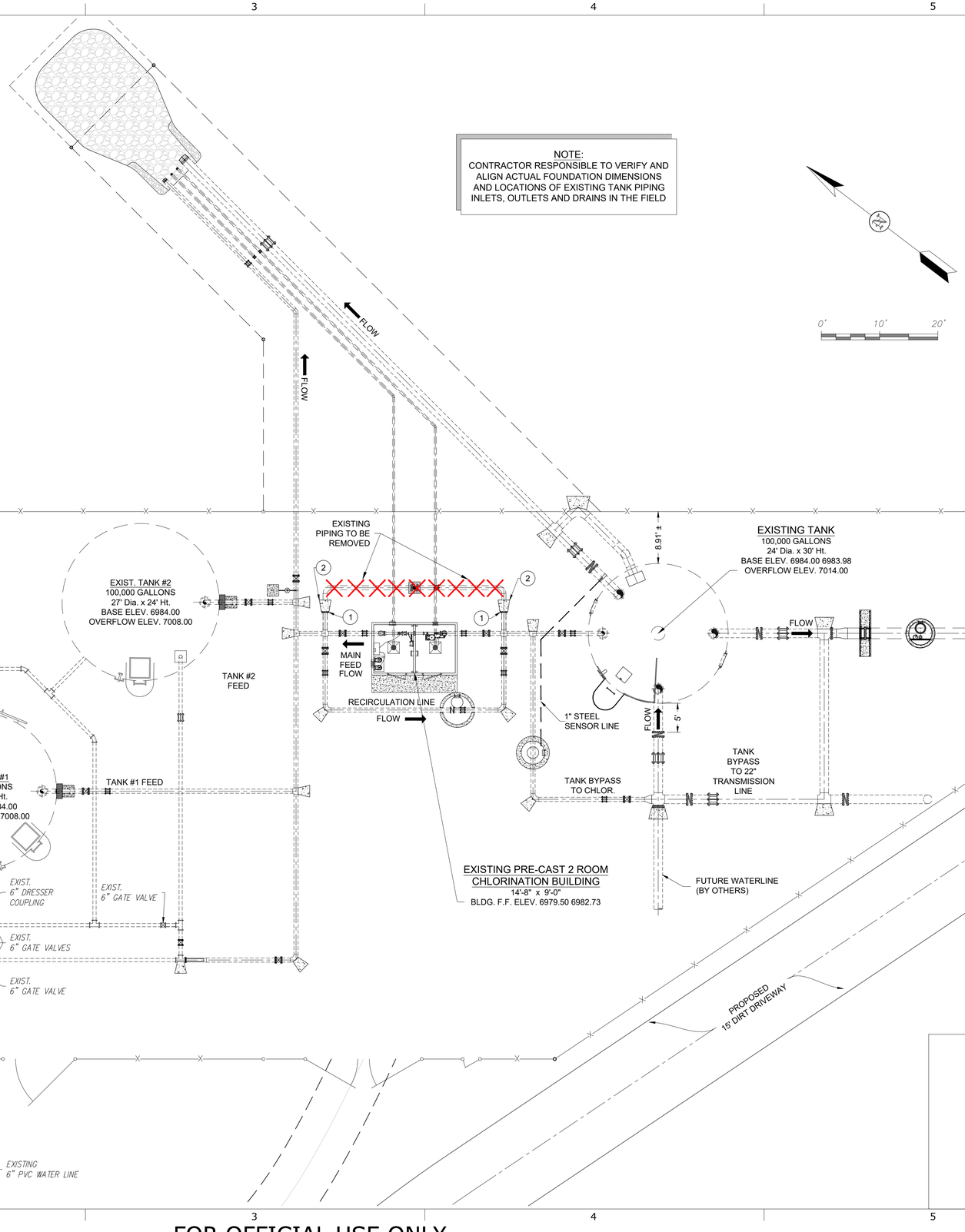
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KEYED NOTES - DZ TANK SITE	
Item No.	Description
1	8" MJ D.I. END CAP
2	THRUST BLOCK (2.5' x 2.5' x 2.0') SEE SHEET DT-3)

NOTES:

1. ALL BURIED METALLIC COMPONENTS, INCLUDING PIPES, FITTINGS, VALVES, COUPLINGS, ETC. SHALL BE CATHODICALLY PROTECTED. ELECTRICALLY ISOLATE ALL TANK AND BUILDING CONNECTIONS IN ACCORDANCE WITH CATHODIC PROTECTION SYSTEM DESIGN. CP SYSTEM DESIGN TO BE PROVIDED BY CONTRACTOR, PER SPECIFICATIONS. .
2. ALL STEEL PIPE AND FITTINGS SHALL BE STANDARD WALL THICKNESS UNLESS OTHERWISE NOTED.
3. ALL BURIED STEEL PIPE SHALL BE COLD-APPLIED TAPE COATED AND FUSION-BONDED EPOXY COATED, PER SPECIFICATIONS.
4. ALL STEEL PIPE AND FITTINGS BEYOND TANK AND BUILDING FOUNDATIONS SHALL BE SHOP- OR FIELD-WELDED UNLESS OTHERWISE NOTED. ALL FIELD-WELDED PIPES AND FITTINGS SHALL BE RE-COATED PER SPECIFICATIONS AFTER WELDING.

NOTE:
CONTRACTOR RESPONSIBLE TO VERIFY AND ALIGN ACTUAL FOUNDATION DIMENSIONS AND LOCATIONS OF EXISTING TANK PIPING INLETS, OUTLETS AND DRAINS IN THE FIELD



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REACH 21 PIPELINE

DZ TANK SITE PIPING PLAN UPDATES

SHEET C-18

SHEET of

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CAD FILENAME
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NOTES:

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

SIDE CLEARANCE TABLE FOR SOIL TRENCH AND SELECT MATERIAL OR CLSM EMBEDMENT

		DUCTILE IRON		PVC		HDPE	
HEIGHT OF COVER	CMP	MATERIAL TYPE 2*	MATERIAL TYPE 3*	MATERIAL TYPE 2	MATERIAL TYPE 3	MATERIAL TYPE 2	MATERIAL TYPE 3
<= 10'	12"	12"	12"	12"	12"	24"	24"
<= 15'	NA	12"	12"	12"	12"	24"	24"
<= 20'	NA	NA	NA	12"	12"	24"	24"

NA - NOT APPLICABLE
* WHEN BACKFILL IS COMPACTED, PROVIDE AN ADDITIONAL 6" OF SIDE CLEARANCE.
1. BACKFILL CANNOT EXCEED 5' UNTIL EMBEDMENT OBTAINS AN UNCONFINED COMPRESSIVE STRENGTH OF 30 PSI.
2. DUCTILE IRON PIPE INCLUDES STANDARD WATER PRESSURES OF 250 AND 300 PSI.
3. PVC PIPE INCLUDES DR RATIOS OF 18, 21, AND 25.
4. HDPE PIPE IS FOR DR11 ONLY.

TRENCH SELECTION MAXIMUM DEPTH OF BORE USING CLSM EMBEDMENT

		MAXIMUM COVER DEPTH* (FEET)	
PIPE MATERIAL	PIPE SIZE/ CLASS	MATERIAL TYPE 2	MATERIAL TYPE 3
PVC	24" DR25	16	12
PVC	24" DR21	20	15
PVC	20" DR25	17	13
PVC	20" DR21	20	16
PVC	20" DR18	20	20
HDPE	20" DR11	20	20
STEEL	ALL DIAMETERS	NA	NA
DUCTILE IRON	ALL DIAMETERS	NA	NA

NA - NOT ALLOWED - NATIVE MATERIAL EMBEDMENT NOT ALLOWED.
* THE MAXIMUM COVER ALLOWED MAY BE INCREASED BASED ON THE TRENCH SIDE WALL STRENGTH AS APPROVED BY THE COR AND BASED ON INPUT FROM THE DESIGN ENGINEER.

MINIMUM PERCENT COMPACTION FOR EMBEDMENT IN NON-TRAFFICKED AREAS

CLEAN COARSE-GRAINED SOILS

Cover Depth	Minimum Compaction
4' to 15'	85%
15' to 20'	95%

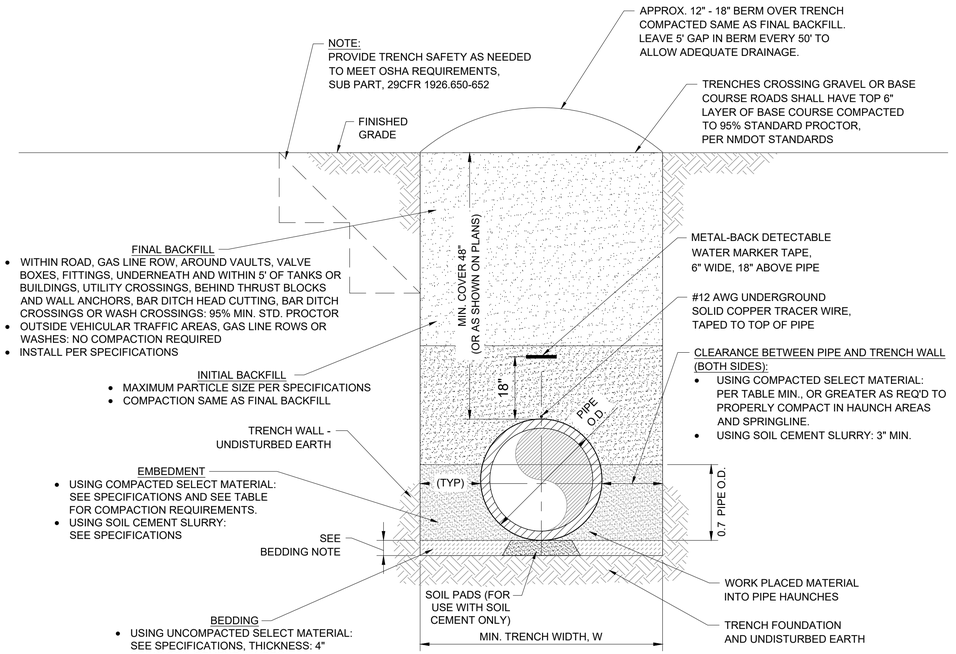
Coarse-grained soils (sand or gravel), GW, GP, SW, SP, with less than 12% fines

SANDY OR GRAVELLY FINE-GRAINED SOILS & COARSE-GRAINED SOILS WITH FINES

Cover Depth	Minimum Compaction
4' to 10'	85%
10' to 12'	95%

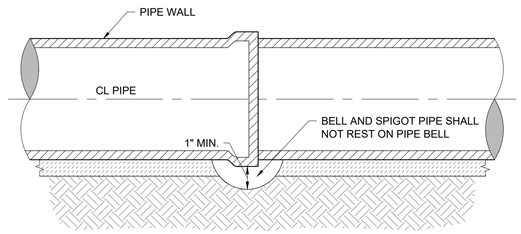
Fine-grained soils (LL<50) Soils with medium to no plasticity, CL, ML, ML-CL, with more than 30% coarse-grained particles, or Coarse-grained soils (sand or gravel), GM, GC, SM, SC, with more than 12% fines

NOTES ON COMPACTION:
1. ALL COMPACTION VALUES BASED ON STD. PROCTOR, ASTM D698. SOIL CLASSIFICATIONS BASED ON ASTM D2487.
2. EMBEDMENT WITHIN DRIVING SURFACES OF ALL ROADS, 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.



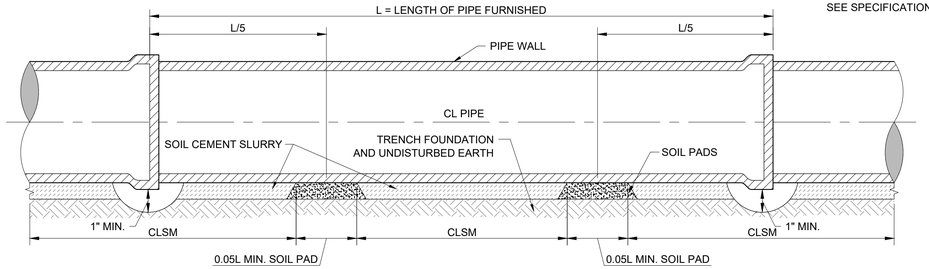
TYPICAL TRENCH DETAIL

NOT TO SCALE



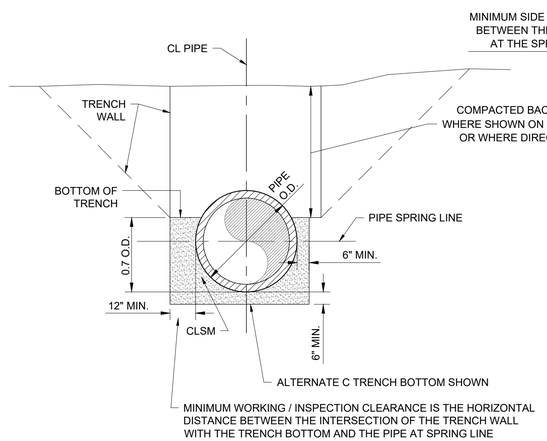
TYPICAL BELL HOLE DETAIL

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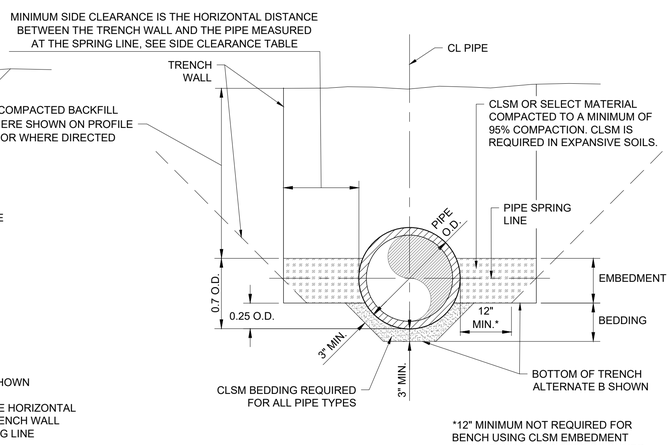
SOIL CEMENT INSTALLATION WITH SOIL PADS

NOT TO SCALE



ROCK TRENCH - MATERIAL TYPE 1

NOT TO SCALE



SOIL TRENCH - MATERIAL TYPE 2 & 3

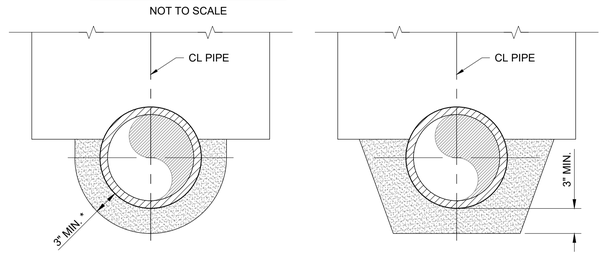
NOT TO SCALE

NATIVE MATERIAL PROPERTIES

MATERIAL TYPE 1 - TYPICAL TRENCH WALL MATERIALS WOULD BE ROCK MATERIALS CLASSIFIED AS SANDSTONE, CLAYSTONE, MUDSTONE, OR SILTSTONE; CEMENTED SOILS; AND CLAYEY MATERIAL WITH IN-PLACE DENSITIES OF 95% STANDARD PROCTOR OR HIGHER.

MATERIAL TYPE 2 - TYPICAL TRENCH WALL MATERIALS WOULD INCLUDE SILTY OR CLAYEY MATERIAL WITH IN-PLACE DENSITIES BETWEEN 85% AND 95% STANDARD PROCTOR; OR COHESIVE SOILS WITH IN-PLACE RELATIVE DENSITIES 40% OR GREATER.

MATERIAL TYPE 3 - TYPICAL TRENCH WALL MATERIALS WOULD INCLUDE LOW-DENSITY COHESIONLESS SOILS (CLEAN SANDS AND / OR LOOSE CLEAN GRAVELS) WITH AN IN-PLACE RELATIVE DENSITY BELOW 40%; ELASTIC SILT; LOW DENSITY SILTY OR CLAYEY SOILS WITH A DENSITY BELOW 85% STANDARD PROCTOR.



*6" MINIMUM REQUIRED BETWEEN BOTTOM OF PIPE AND ROCK SURFACES

ACCEPTABLE TRENCH BOTTOMS FOR CLSM

NOT TO SCALE

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CUTTER LATERAL - REACH 21 WATER PIPELINE

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REACH 21 PIPELINE

PIPELINE TRENCH DETAILS

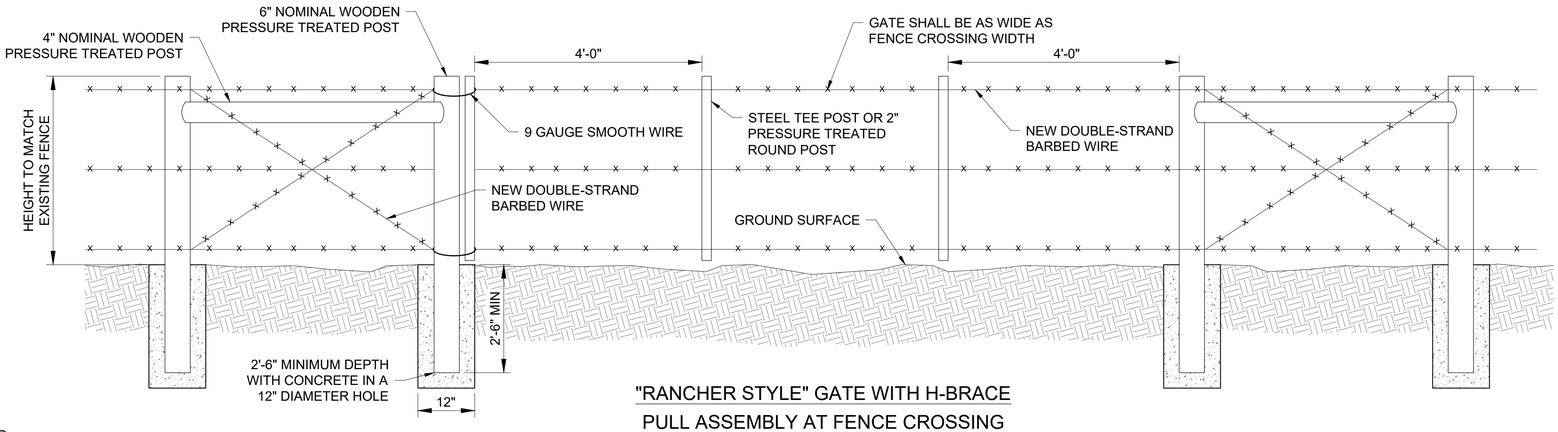
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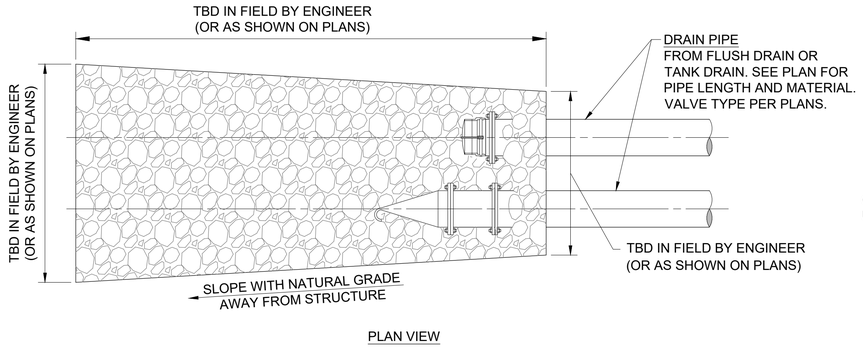
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NOTES:
1. EXISTING FENCE SHALL NOT BE CUT UNTIL SECURED TO H-BRACE ASSEMBLY.
2. INSTALL RANCHER STYLE GATE AT ALL FENCE CROSSINGS UNLESS SPECIFICALLY NOTED OTHERWISE ON PLANS.

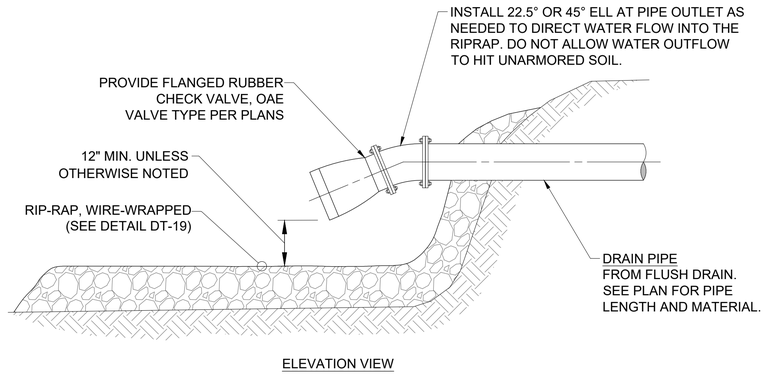


"RANCHER STYLE" GATE WITH H-BRACE PULL ASSEMBLY AT FENCE CROSSING

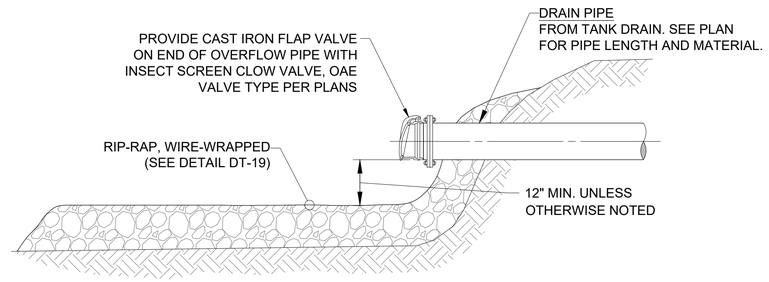
NOT TO SCALE



PLAN VIEW



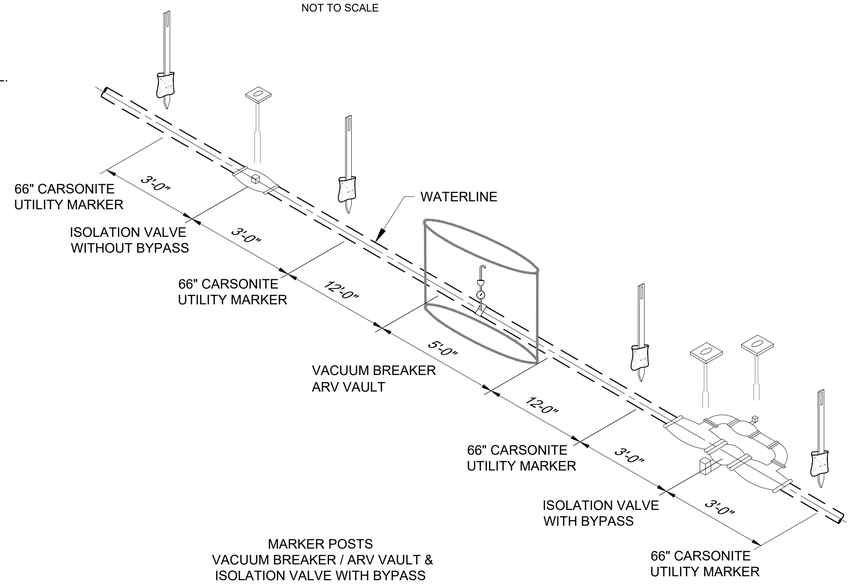
ELEVATION VIEW



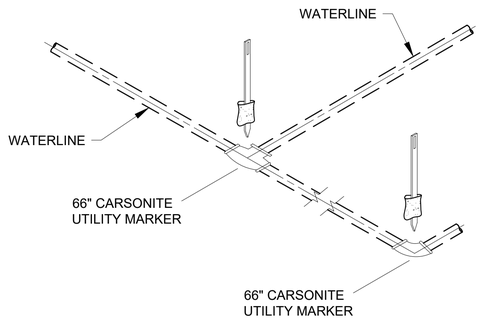
ELEVATION VIEW

TYPICAL SPLASH PAD DETAIL

NOT TO SCALE



MARKER POSTS
VACUUM BREAKER / ARV VAULT &
ISOLATION VALVE WITH BYPASS

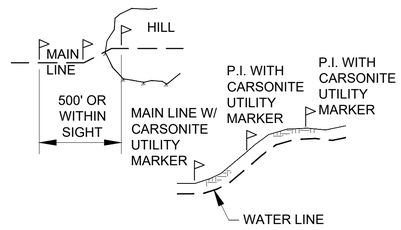


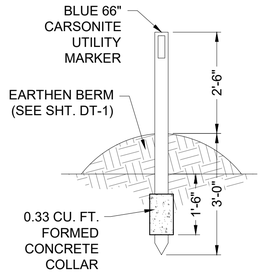
MARKER POSTS
TEE & ELL

TYPICAL MARKER POSTS

NOT TO SCALE

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





INDIVIDUAL MARKER POST

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FARMINGTON, NM — 2017-12-07

REACH 21 PIPELINE

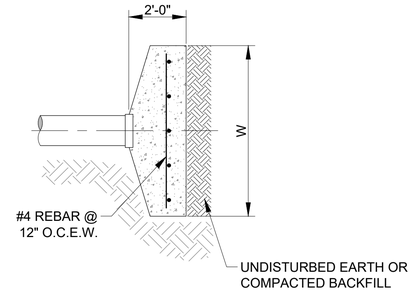
MISCELLANEOUS CONSTRUCTION DETAILS

SHEET DT-2

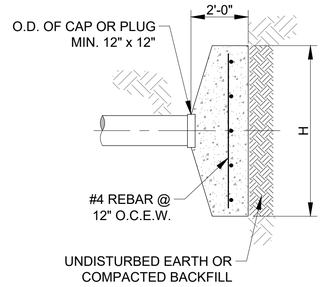
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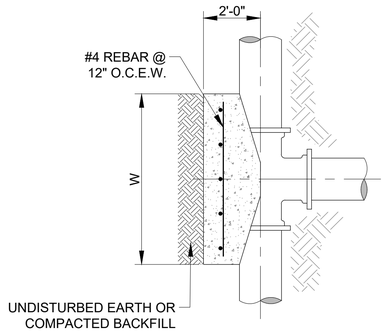
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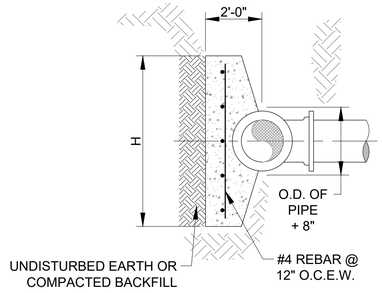
PLAN VIEW
CONCRETE BLOCKING
FOR PLUG OR CAP



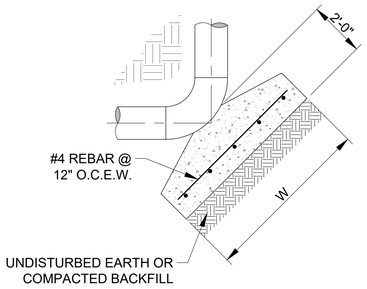
ELEVATION VIEW
CONCRETE BLOCKING
FOR PLUG OR CAP



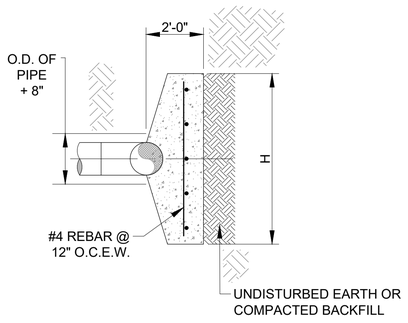
PLAN VIEW
CONCRETE BLOCKING
FOR TEE



ELEVATION VIEW
CONCRETE BLOCKING
FOR TEE



PLAN VIEW
CONCRETE BLOCKING
FOR ELBOW



ELEVATION VIEW
CONCRETE BLOCKING
FOR ELBOW

THRUST BLOCK DETAIL
NOT TO SCALE

Reach 21 Thrust Block and Wall Anchor Summary

Station	Fitting	Type	Pipe Size (in)	DR Rating DR	Required Height/Width (ft)
25+25	BFV	Wall Anchor	24	25	**8.0**
38+43	PVC TO HDPE	Wall Anchor	24	11	**7.5**
46+23	HDPE TO PVC	Wall Anchor	24	11	**7.5**
46+38	4" Flush Valve	Thrust Block	24	25	**2.0**
47+45	45 BEND (33.75 ACTUAL)	Thrust Block	24	25	**7.0**
51+90	45 BEND	Thrust Block	24	25	**7.0**
71+79	BFV (pipe DR transition)	Wall Anchor	20	18	**8.0**
93+05	PVC TO HDPE	Wall Anchor	20	11	**6.5**
99+04	HDPE TO PVC	Wall Anchor	20	11	**6.5**
99+19	BFV	Wall Anchor	20	25	**6.5**
121+55	22.5 BEND	Thrust Block	20	25	**4.0**
127+72	PVC TO HDPE	Wall Anchor	20	11	**6.5**
132+60	HDPE TO PVC	Wall Anchor	20	11	**6.5**
149+58	BFV	Wall Anchor	20	25	**6.5**
153+31	45 BEND (33.75 ACTUAL)	Thrust Block	20	25	**6.0**
156+76	45 BEND (33.75 ACTUAL)	Thrust Block	20	25	**6.0**
172+68	22.5 BEND	Thrust Block	20	25	**4.0**
177+18	22.5 BEND	Thrust Block	20	25	**4.0**
182+61	45 BEND (SITE)	Thrust Block	20	25	**6.0**
191+60	PVC TO HDPE	Wall Anchor	20	11	**6.5**
193+90	HDPE TO PVC	Wall Anchor	20	11	**6.5**
199+20	4" Flush Valve	Thrust Block	20	25	**2.0**
199+35	BFV	Wall Anchor	20	25	**6.5**
DZ Tank	Cap at Chlorinator Bypass	Thrust Block	8	STD Wall	**2.5**
DZ Tank	Cap at Chlorinator Bypass	Thrust Block	8	STD Wall	**2.5**

GENERAL NOTES:

1. CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3000 psi, MINIMUM COMPRESSIVE STRENGTH IN 28 DAYS. REBAR SHALL BE 60 psi.
2. CONCRETE WALL ANCHOR SHALL BEAR ON UNDISTURBED OR COMPACTED SOIL ON HDPE SIDE.
3. MINIMUM 1.5' COVER OVER TOP OF THRUST BLOCK.
4. IF CONTRACTOR CHOOSES TO INSTALL DUCTILE IRON ELL AT LOCATION NOT INCLUDED IN SUMMARY, CONTRACTOR TO NOTIFY ENGINEER FOR REQUIRED THRUST BLOCK DIMENSIONS.
5. VERTICAL DUCTILE IRON ELLS SHALL NOT BE ALLOWED.

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CUTTER LATERAL - REACH 21 WATER PIPELINE

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REACH 21 PIPELINE

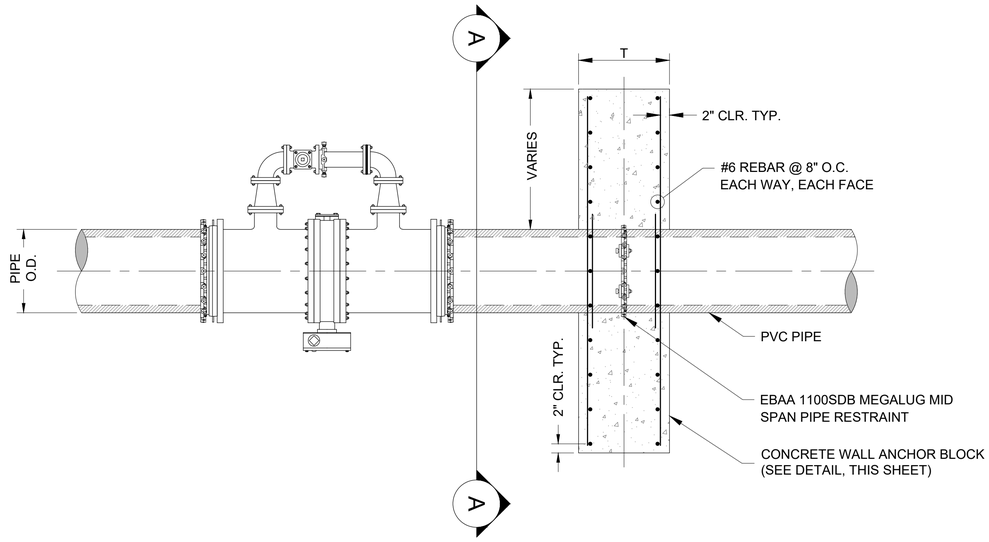
THRUST BLOCK DETAILS

SHEET DT-3

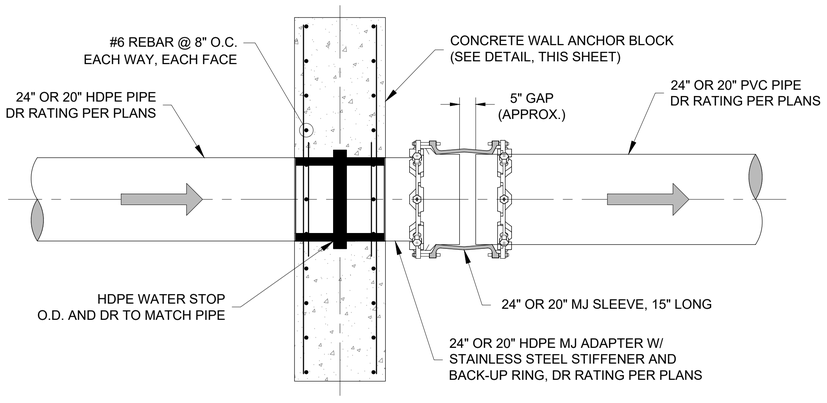
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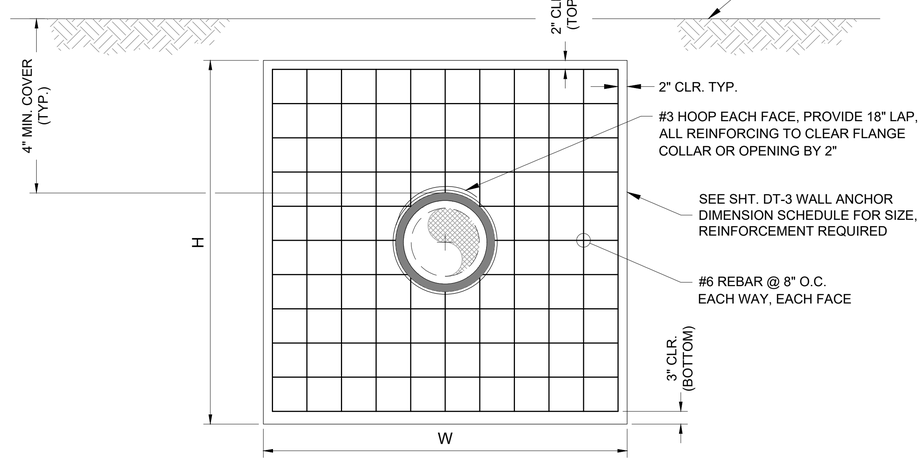
PLAN VIEW FOR PVC



PLAN VIEW

HDPE TO PVC PIPE TRANSITION W/ ANCHOR BLOCK & ANCHOR RING

NOT TO SCALE



SECTION "A-A"

CONCRETE WALL ANCHOR BLOCK FOR USE W/ BUTTERFLY VALVE AND HDPE TRANSITION RESTRAINT

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REACH 21 PIPELINE

WALL ANCHOR
BLOCK & PIPE
TRANSITION DETAILS

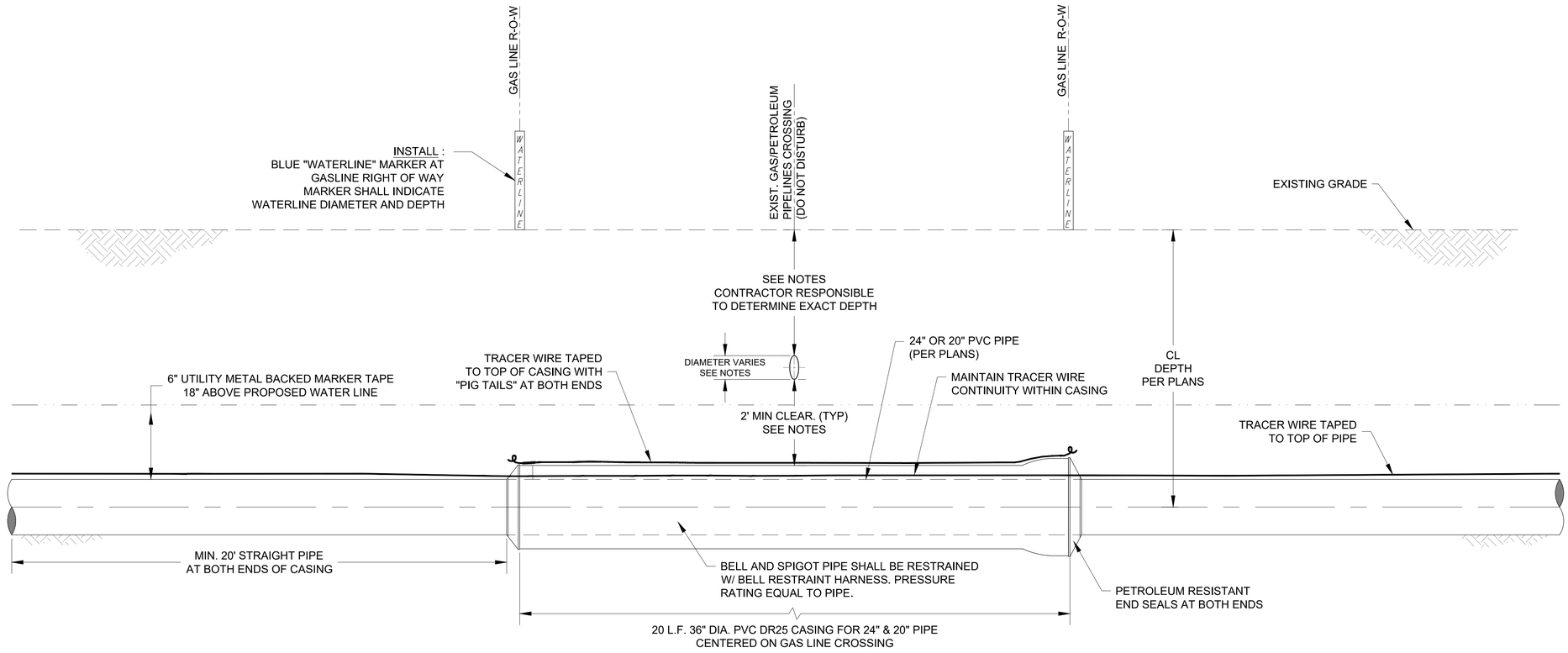
SHEET DT-4

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TYPICAL SINGLE GAS PIPELINE CROSSING DETAIL

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SPECIAL NOTES AND CONTACTS-UTILITY PIPELINE CROSSINGS

NOTES:

1. ALL DEPTHS AND LOCATIONS OF EXISTING UTILITIES ARE APPROXIMATE. CONTRACTOR RESPONSIBLE TO DETERMINE EXACT LOCATION, DEPTH AND SIZE OF ALL BURIED UTILITY LINES AND TO COMPLY WITH ALL REQUIREMENTS SET FORTH IN THE ENCROACHMENT AGREEMENTS PROVIDED BY UTILITY LINE OPERATORS AND IN THE DETAILS AND SPECIAL NOTES OF THESE DRAWINGS.
2. NOTIFY GAS LINE COMPANIES (LISTED BELOW) 30 WORKING DAYS AND CALL NM ONE-CALL AT LEAST 3 WORKING DAYS PRIOR TO GRADING, CROSSING, MATERIAL STORAGE OR EQUIPMENT MOVING ACROSS GAS LINE RIGHT-OF-WAY OR ADJACENT ACCESS ROADS.
3. GAS LINE COMPANY REPRESENTATIVE MUST BE PRESENT DURING ALL CONSTRUCTION ACTIVITIES WITHIN GAS LINE RIGHT-OF-WAY, INCLUDING GRADING, EXCAVATION AND CLEANUP.
4. CONTRACTOR RESPONSIBLE TO LOCATE AND EXPOSE ALL EXISTING GAS / PETROLEUM LINES, IN ACCORDANCE WITH GAS COMPANY REQUIREMENTS.
5. EXCAVATE BY HAND OR VACUUM DRILL, ETC WITHIN 2 FEET OF GAS LINE, OR MORE IF GAS LINE COMPANY REQUIRES, WHICHEVER IS STRICTER.
6. CROSS UNDER ALL GAS LINES. 2' MIN. CLEARANCE FROM TOP OF CASING TO BOTTOM OF GAS LINE.
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. CONTRACTOR SHALL COMPLETE ANY AND ALL ENCROACHMENT AGREEMENTS REQUIRED BY GAS LINE COMPANIES. ABIDE BY ALL CONDITIONS STIPULATED BY GAS LINE COMPANIES.
9. HEAVY EQUIPMENT MUST CROSS PIPELINE ONLY AT CROSSING LOCATIONS APPROVED BY GAS LINE COMPANIES.
10. CARRIER PIPE WITHIN A 200 FT. RADIUS OF GAS LINE SHALL BE BELL-AND-SPIGOT PVC WITH PETROLEUM RESISTANT GASKETS.
11. TRACER WIRE CONTINUITY SHALL BE MAINTAINED ACROSS THE GAS LINE XING.
12. APPROXIMATE DEPTH CALL OUTS ARE MEASURED FROM THE EXISTING GROUND TO THE TOP OF PIPE.
13. PETROLEUM RESISTANT GASKETS TO BE USED WITHIN 200' RADIUS OF GAS LINE CROSSING.
14. PVC PIPE WITHIN CASING TO BE RESTRAINED WITH BELL RESTRAINT HARNESSES.

GAS LINE CROSSINGS

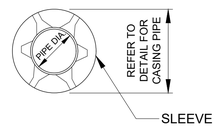
(1) = STA: 26+98 (APPROX.)
ENTERPRISE MID AMERICA PIPELINE CO. 1-800-203-1347
JOHNNY SANDOVAL - FIELD CONTACT 505-320-1629
GAS PIPELINE (6 5/8" O.D., 3'-7" BURY DEPTH)
SEC-9, T-25-N, R-8-W

(2) = STA: 53+97 (APPROX.)
ENTERPRISE MID AMERICA PIPELINE CO. 1-800-203-1347
JOHNNY SANDOVAL - FIELD CONTACT 505-320-1629
GAS PIPELINE (4 1/2" O.D., 4'-6" BURY DEPTH)
SEC-9, T-25-N, R-8-W

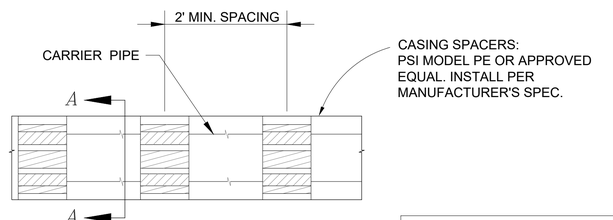
(3) = STA: 147+74 (APPROX.)
ENTERPRISE MID AMERICA PIPELINE CO. 1-800-203-1347
JOHNNY SANDOVAL - FIELD CONTACT 505-320-1629
GAS PIPELINE (4 1/2" O.D., 2'-4" BURY DEPTH)
SEC-18, T-25-N, R-8-W

(4) = STA: 168+54 (APPROX.)
ENTERPRISE MID AMERICA PIPELINE CO. 1-800-203-1347
JOHNNY SANDOVAL - FIELD CONTACT 505-320-1629
GAS PIPELINE (4 1/2" O.D., 2'-8" BURY DEPTH)
SEC-18, T-25-N, R-8-W

(5) = STA: 198+66 (APPROX.)
WILLIAMS SERVICES 505-632-4632
CHRISTOPHER LUCERO - FIELD CONTACT 505-632-4463
GAS PIPELINE (8" O.D. STEEL, 4'-10" BURY DEPTH)
SEC-18, T-25-N, R-8-W



SECTION A-A



PIPE CASING DETAIL

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REACH 21 PIPELINE

GAS LINE CROSSING DETAILS

SHEET DT-5

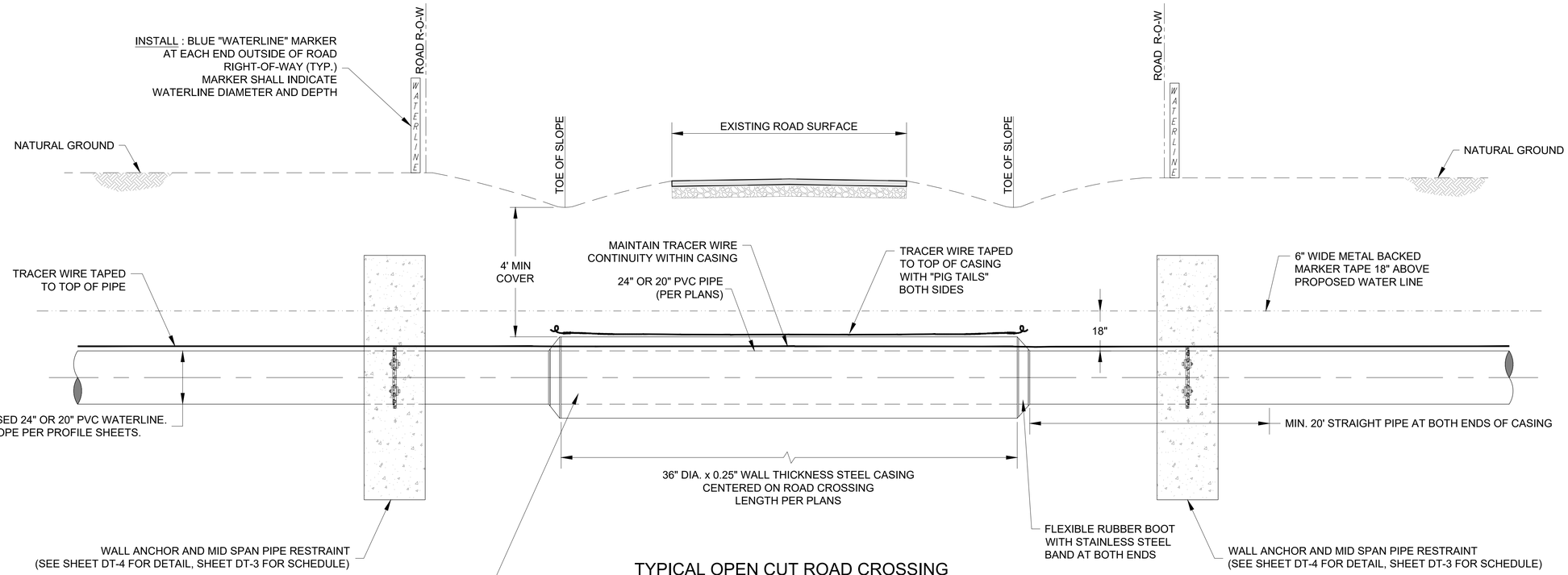
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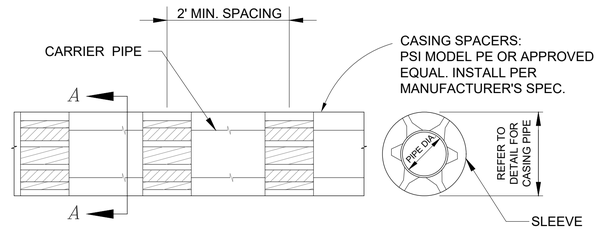


TYPICAL OPEN CUT ROAD CROSSING

NOT TO SCALE

CONSTRUCTION NOTES:

1. 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).
2. APPLY CATHODIC PROTECTION TO ALL BURIED METALLIC CASINGS LOCATED WITHIN CORROSIVE SOIL ZONES, AS DESIGNATED IN THE PLANS AND/OR SPECIFICATIONS.
3. ALL METALLIC PIPE, WHETHER CATHODICALLY PROTECTED OR NOT, SHALL BE PROVIDED WITH CORROSION MONITORING SYSTEMS.
4. TRACER WIRE CONTINUITY SHALL BE MAINTAINED ACROSS THE ROAD XING.
5. FOR MINIMUM PVC PIPE THRUST BLOCKING REQUIREMENTS ON EACH SIDE OF CASING, SEE SCHEDULE SHEET DT-4.
6. PVC PIPE WITHIN CASING TO BE RESTRAINED WITH BELL RESTRAINT HARNESSES.
7. FOR SAN JUAN COUNTY ROADS, ADHERE TO ANY ADDITIONAL CROSSING PERMIT REQUIREMENTS.



PIPE CASING DETAIL

NOT TO SCALE

SECTION A-A

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REACH 21 PIPELINE

ROAD CROSSING DETAILS

SHEET DT-6

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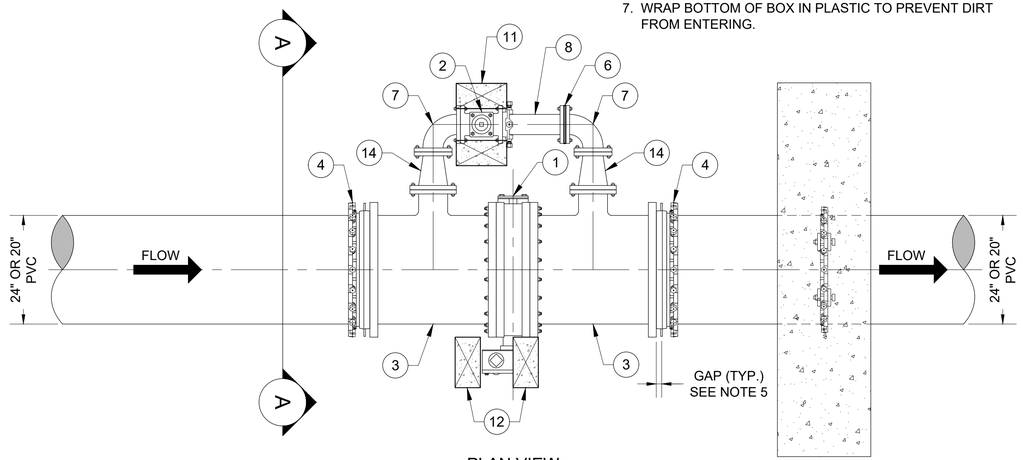
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KEYED NOTES - PIPELINE BUTTERFLY VALVE

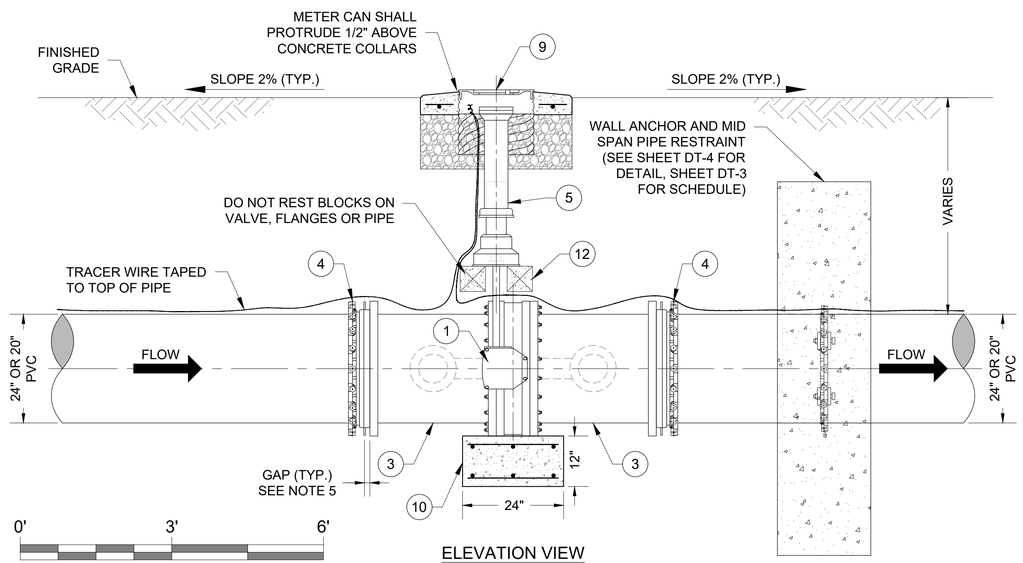
Item No.	Description
1	24" (SHOWN) OR 20" FL x FL BUTTERFLY VALVE W/ MANUAL BURIED SERVICE ACTUATOR AWWA C504, CLASS 150
2	4" FL x MJ GATE VALVE, 250 psi
3	24" x 6" (SHOWN) OR 20" x 6" D.I. REDUCING TEE, FLANGED, 250 psi
4	24" (SHOWN) OR 20" MJ FLANGE ADAPTER, FBE COATED, W/ SS 304 BOLTS, MEGAFLANGE SERIES 2100, OAE, 235 psi
5	CAST IRON SLIP TYPE VALVE BOX WITH LOCKABLE COVER
6	9" O.D. STAINLESS STEEL ORIFICE PLATE TO MATCH 4" FLANGE (SEE DETAIL / TABLE THIS SHEET)
7	4" D.I. 90° ELL, FLANGED, 250 psi
8	4" D.I. SPOOL, FL x PLAIN END, 250 psi
9	18" DIA. HEAVY DUTY, TRAFFIC-RATED METER CAN (PAINTED BLUE) W/ LOCKING COVER AND FORMED CONCRETE COLLAR, (W/ #4 REBAR)
10	2' x 2' x 1' CONCRETE BLOCK, W/ #4 REBAR 10" O.C.E.W. 2", CLR.
11	1' x 1' x 1' CONCRETE BLOCK, W/ #4 REBAR 8" O.C.E.W. 2", CLR.
12	12" x 6" x 6" CONCRETE BLOCK
13	CAST IRON SLIP TYPE VALVE BOX WITH NON LOCKABLE COVER, PAINTED BLUE
14	6" x 4" D.I. REDUCING TEE, FLANGED, 250 psi

NOTES:

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

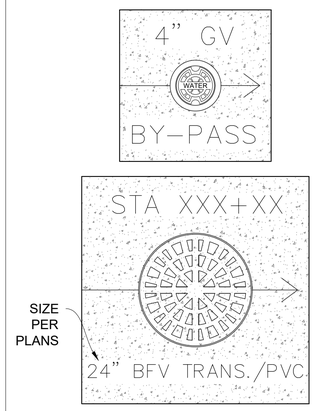


PLAN VIEW



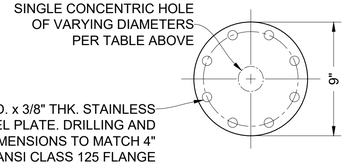
ELEVATION VIEW

TYPICAL 24" (SHOWN) OR 20" PIPELINE BUTTERFLY VALVE ASSEMBLY WITH BYPASS



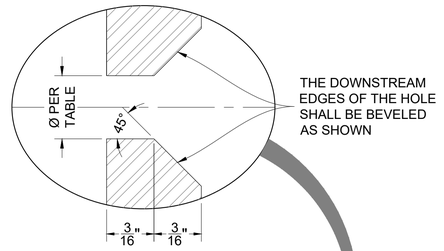
CONCRETE COLLAR ETCHING DETAIL

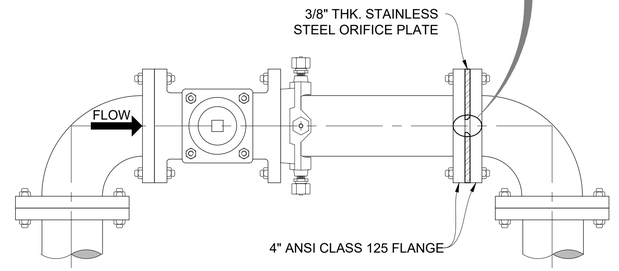
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SUMMARY OF BUTTERFLY VALVE ORIFICE PLATE DRILLING		
Station	Elevation	Orifice Plate Ø of Hole (Inches)
25+25	6619	3.23
71+70	6678	2.07
99+19	6723	2.18
149+58	6840	2.47
199+35	6890	2.71

NOTE:
HOLE TO BE DRILLED CENTERED ON THE ORIFICE PLATE.

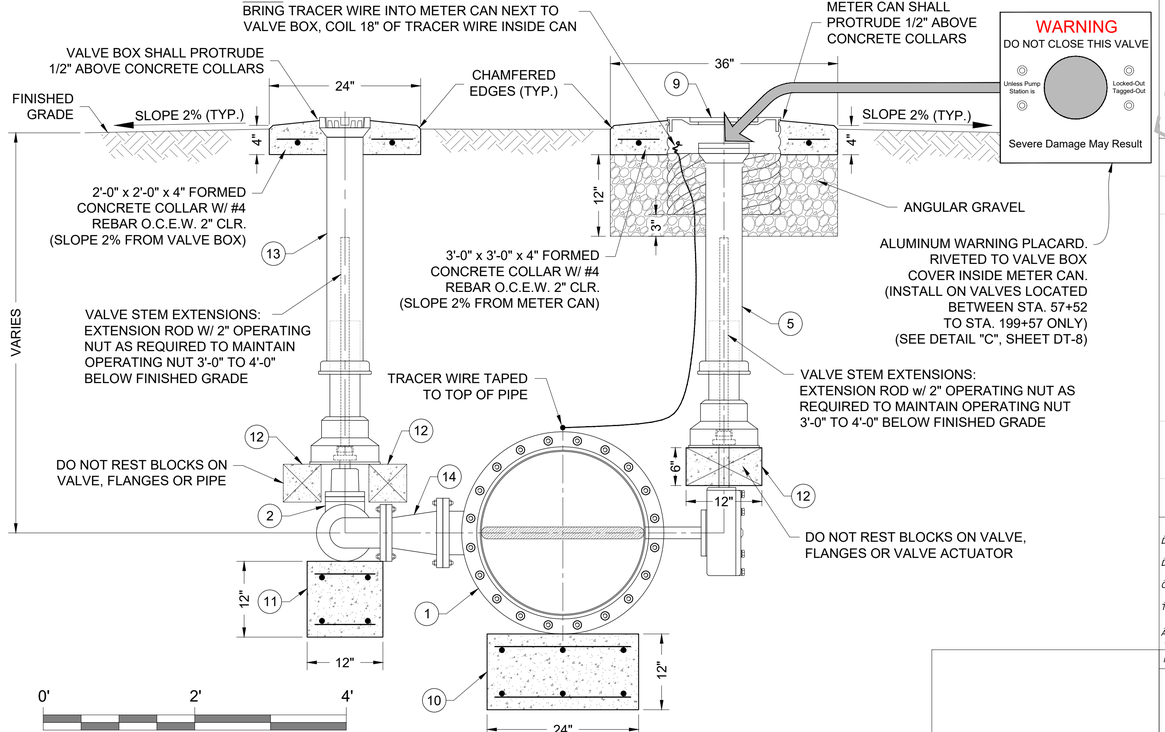




ORIFICE PLATE ASSEMBLY

NOT TO SCALE

NOTE:
BRING TRACER WIRE INTO METER CAN NEXT TO VALVE BOX, COIL 18" OF TRACER WIRE INSIDE CAN



SECTION "A-A"

TYPICAL 24" (SHOWN) OR 20" PIPELINE BUTTERFLY VALVE ASSEMBLY WITH BY-PASS

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WATER PIPELINE

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REACH 21 PIPELINE

PIPELINE BUTTERFLY VALVE DETAILS

SHEET DT-7

SHEET of

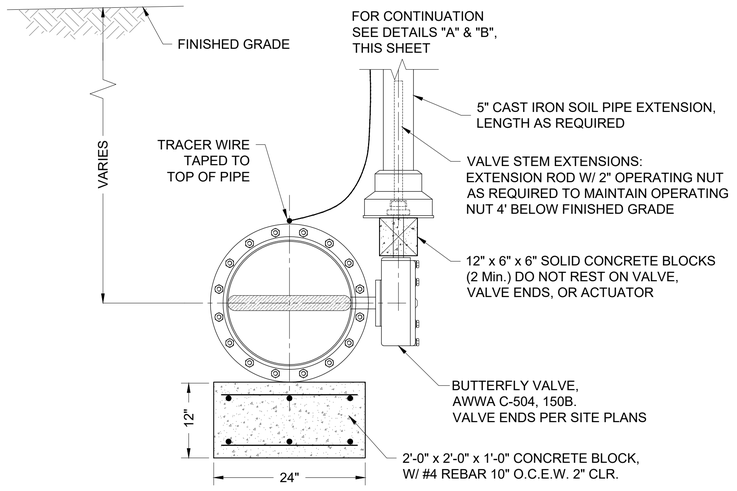
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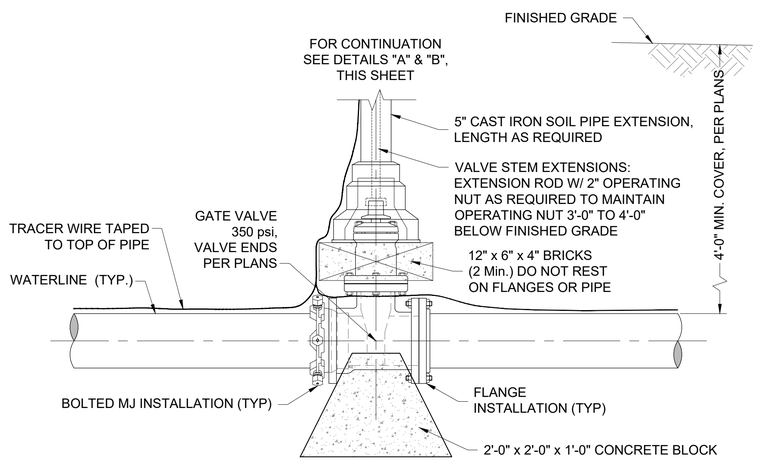
1. CONTRACTOR SHALL SCRIBE ALL CONCRETE VALVE COLLARS, PER DETAILS "A" & "B" THIS SHEET. CONCRETE SHALL BE SCRIBED PRIOR TO CURING OR ETCHED AFTER CURING WITH 4" GRINDER.
2. AFFIX WARNING PLACARD TO VALVE BOX COVER INSIDE METER CAN FOR ALL MAINLINE VALVES.
3. AFFIX ALUMINUM VALVE IDENTIFICATION PLATES TO ALL SITE VALVE COLLARS, PER DETAILS "B" & "C" THIS SHEET. REFER TO SHEET C-16 FOR VALVE-SPECIFIC LABELING.
4. ALL MATERIALS SHALL BE WORKING PRESSURE RATED TO AT LEAST THE PRESSURE RATING OF THE PIPE, UNLESS OTHERWISE NOTED.
5. ALL BURIED VALVES SHALL BE COATED WITH FUSION BONDED EPOXY, INTERIOR AND EXTERIOR.
6. NOTE VALVE ENDS SHALL BE FL x FL, MJ x MJ, OR FL x MJ AS INDICATED ON PLANS.
7. APPLY CATHODIC PROTECTION TO ALL BURIED METALLIC PRESSURE-BEARING COMPONENTS LOCATED WITHIN CORROSIVE SOIL ZONES, AS DESIGNATED IN THE PLANS AND/OR SPECIFICATIONS.
8. FLANGES SHALL BE ANSI CLASS 125 (IRON).



END VIEW

TYPICAL SITE BUTTERFLY VALVE DETAIL WITHOUT BYPASS

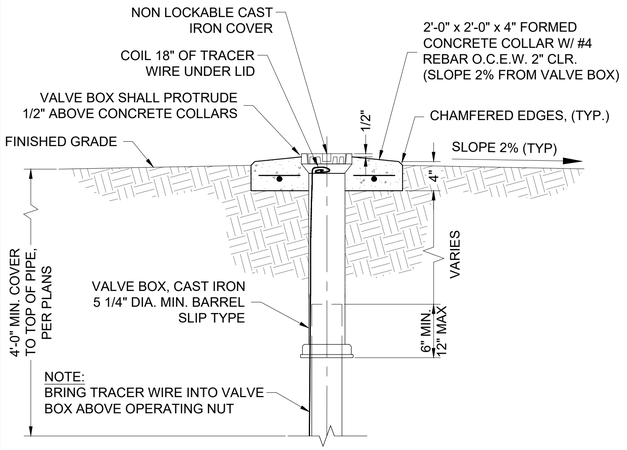
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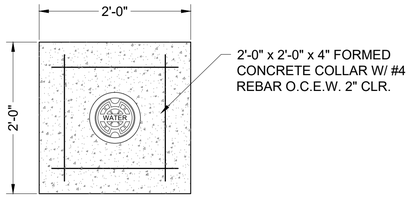
ELEVATION VIEW

TYPICAL GATE VALVE DETAIL

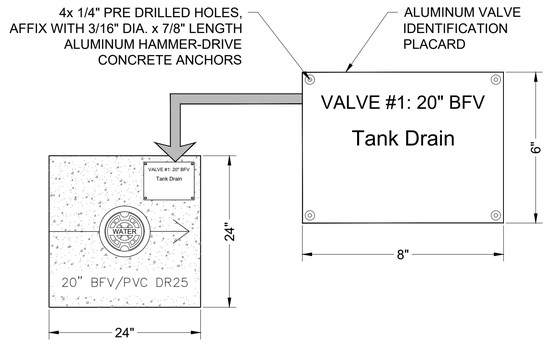
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ELEVATION VIEW



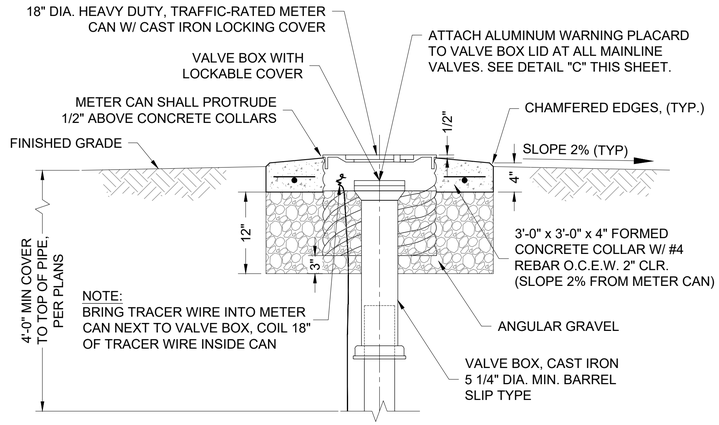
PLAN VIEW - REBAR



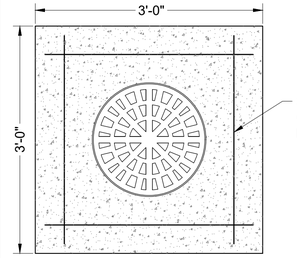
PLAN VIEW - SURFACE

DETAIL "A" TYPICAL SITE VALVE BOX, COLLAR AND VALVE ID PLACARD DETAIL, USE WITHOUT WARNING PLACARD

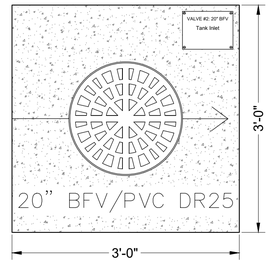
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ELEVATION VIEW



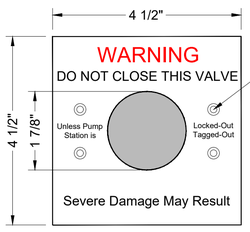
PLAN VIEW - REBAR



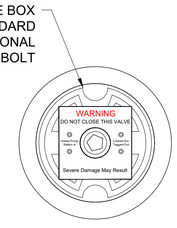
PLAN VIEW - SURFACE SITE VALVE COLLAR

DETAIL "B" TYPICAL SITE VALVE BOX, COLLAR AND VALVE ID PLACARD DETAIL - USE WITH WARNING PLACARD

NOT TO SCALE



WARNING PLACARD FOR MAINLINE VALVES



NOTE:
INSTALL ON VALVES LOCATED BETWEEN STA. 57+52 TO STA. 199+57 ONLY

PLAN VIEW

DETAIL "C" TYPICAL WARNING PLACARD DETAIL

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NEW MEXICO

CUTTER LATERAL - REACH 21
WATER PIPELINE

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NO.	DATE	REVISION	BY	APVD

T Tadano — DESIGNED
M Howard / A Vogenthaler — DRAWN
A Robertson — CHECKED
TECH. APPR.
APPROVED
SUPERVISORY TITLE
FARMINGTON, NM 2017-12-07

REACH 21 PIPELINE

SITE BUTTERFLY & GATE VALVE DETAILS

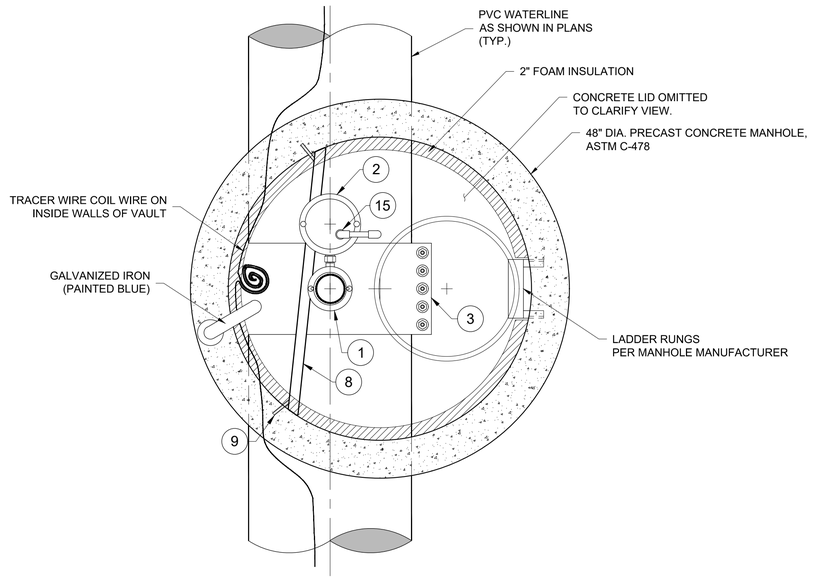
SHEET DT-8

SHEET of

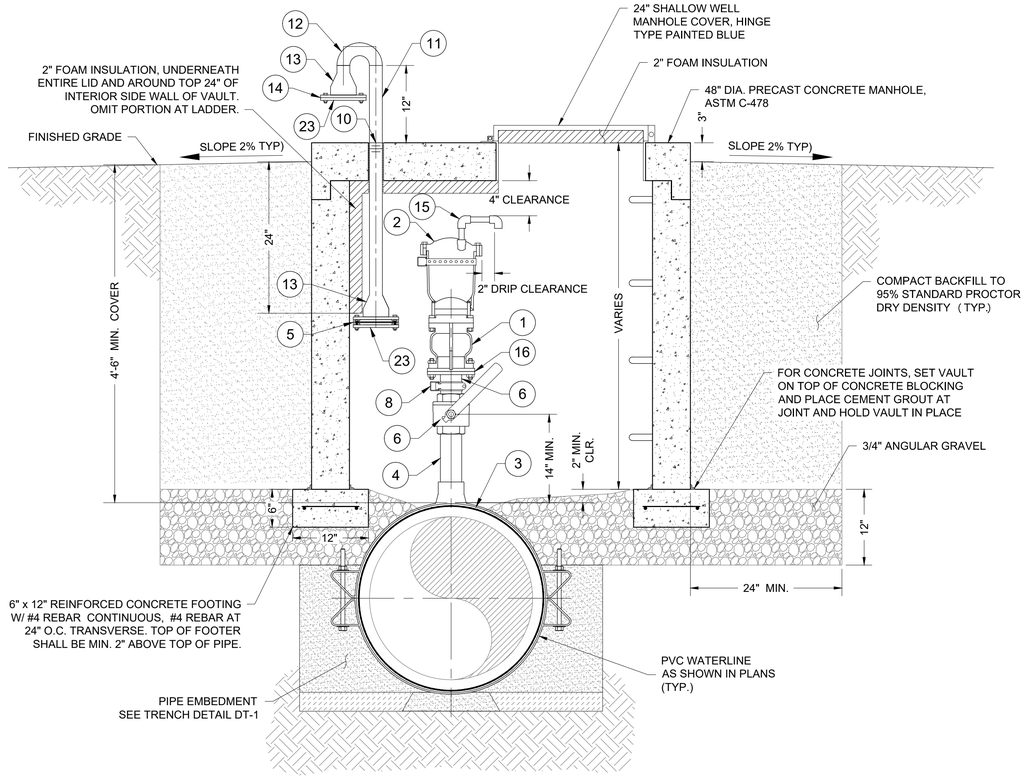
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PLAN VIEW



ELEVATION VIEW

VACUUM RELIEF VALVE DETAIL

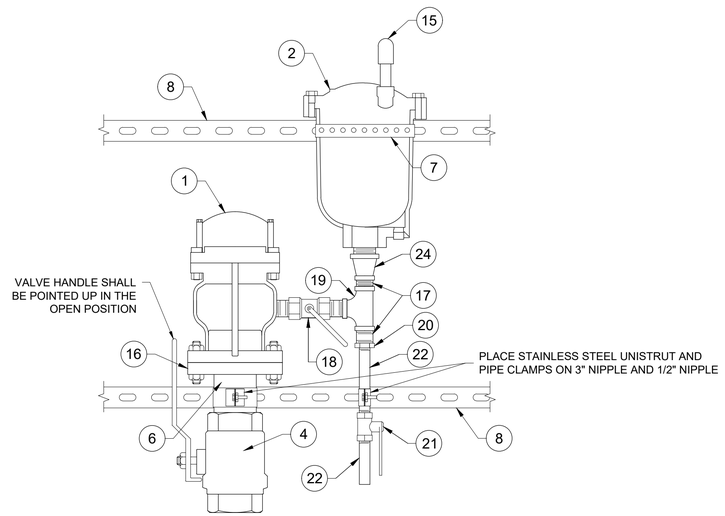
0' 1' 2'

KEYED NOTES - 3" VACUUM RELIEF WITH 1" AIR RELEASE VALVE

Item No.	Description
1	3" VALMATIC MODEL NO. 1803VB.3XF VACUUM RELIEF VALVE, WITH SCREENED HOOD, 200 psi
2	2" VALMATIC MODEL NO. 45.5XFSV AIR RELEASE VALVE, 300 psi
3	24" x 3" (SHOWN) OR 20" x 3" TAPPING SLEEVE, FNPT, 250 psi.
4	3" BALL VALVE, STAINLESS STEEL, NPT, 250 psi
5	4" FREEZE PREVENTION DRAFT DAMPENER. VALMATIC FROSTSAFE MODEL # 1504, OAE
6	3" NIPPLE, SS 304, NPT
7	GALVANIZED PERFORATED METAL HANGER STRAP
8	1 5/8" STAINLESS STEEL 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" x 2" GALVANIZED IRON WELDED REDUCER (PIPE EXTERIOR PAINTED BLUE)
14	VARMINT SCREEN
15	1/2" DOWN SPOUT W/ SCREEN, SCHEDULE 80 PVC
16	3" FLANGE (THREADED), SS 304
17	1" NIPPLE, SS 304, NPT
18	1" BALL VALVE, SS 304, NPT, 250 psi
19	1" TEE, SS 304, NPT, SCHEDULE 40
20	1" x 1/2" REDUCING BUSHING, SS 304, NPT
21	1/2" BALL VALVE, SS 304, NPT, 250 psi
22	1/2" PIPE, SS 304, NPT
23	4" GALVANIZED IRON COMPANION FLANGE, DRILLED/TAPPED TO FIT
24	2" x 1" REDUCER, SS 304, NPT, SCHEDULE 40

NOTES:

1. ALL FLANGES SHALL BE ANSI CLASS 150 (STEEL) OR ANSI CLASS 125 (IRON).
2. 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.
3. AIR VALVE TO BE LOCATED IN FIELD BY ENGINEER.
4. COIL TRACER WIRE ON INSIDE WALLS OF VAULT.
5. ALL STAINLESS STEEL PIPE AND FITTINGS SHALL BE STANDARD WALL.
6. REMOVE ALL PVC CUTTINGS FROM INSIDE MAIN LINE AFTER TAPPING.
7. CONTRACTOR SHALL ETCH ALL VACUUM RELIEF VAULT LIDS WITH 4" GRINDER AS FOLLOWS: PIPE STATION, VALVE SIZE, "ARV, VB", PIPE SIZE AND MATERIAL, WITH DIRECTIONAL ARROWS.
8. DO NOT TAP RESTRAINED PIPE.
9. APPLY CATHODIC PROTECTION TO ALL BURIED NON-STAINLESS METALLIC COMPONENTS LOCATED WITHIN CORROSIVE SOIL ZONES, AS DESIGNATED IN THE PLANS AND/OR SPECIFICATIONS.
10. ALL MATERIALS RATED TO AT LEAST 150 psi UNLESS OTHERWISE NOTED.



FRONT ELEVATION VIEW

VACUUM RELIEF VALVE DETAIL

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NEW MEXICO

CUTTER LATERAL - REACH 21

WATER PIPELINE

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T Tadano
DESIGNED
M Howard / A Vogenthaler
DRAWN
A Robertson
CHECKED
TECH. APPR.
APPROVED
ADMIN APPROVAL - TITLE
FARMINGTON, NM 2017-12-07

REACH 21 PIPELINE

3-INCH VACUUM RELIEF
WITH 2-INCH AIR
RELEASE VALVE DETAIL

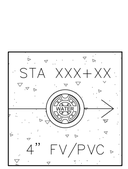
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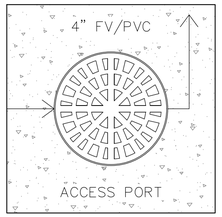
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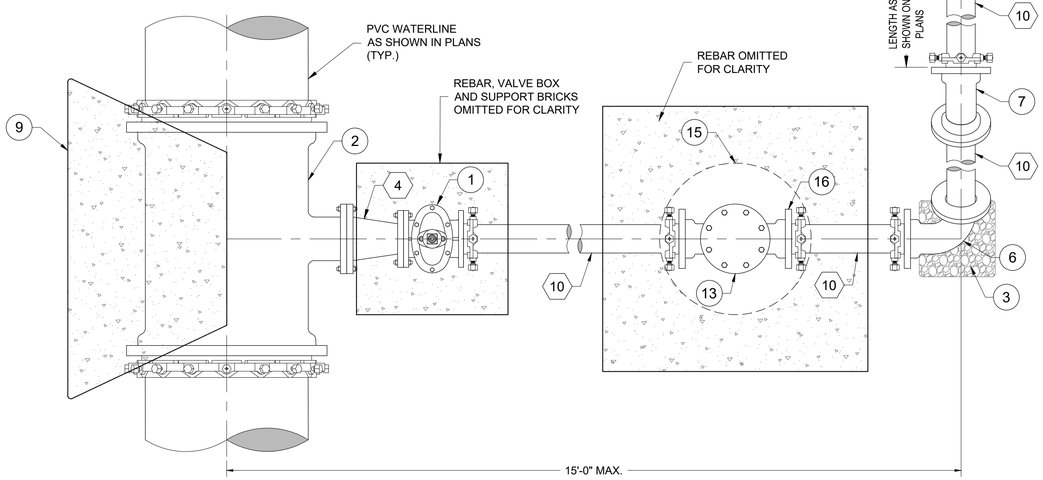
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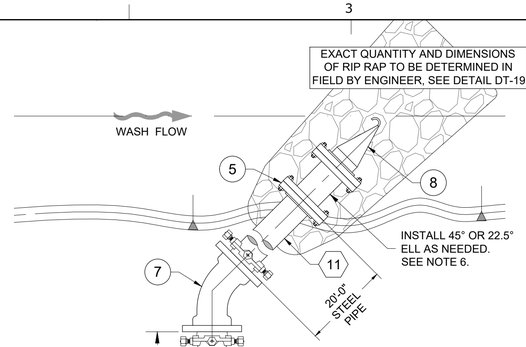


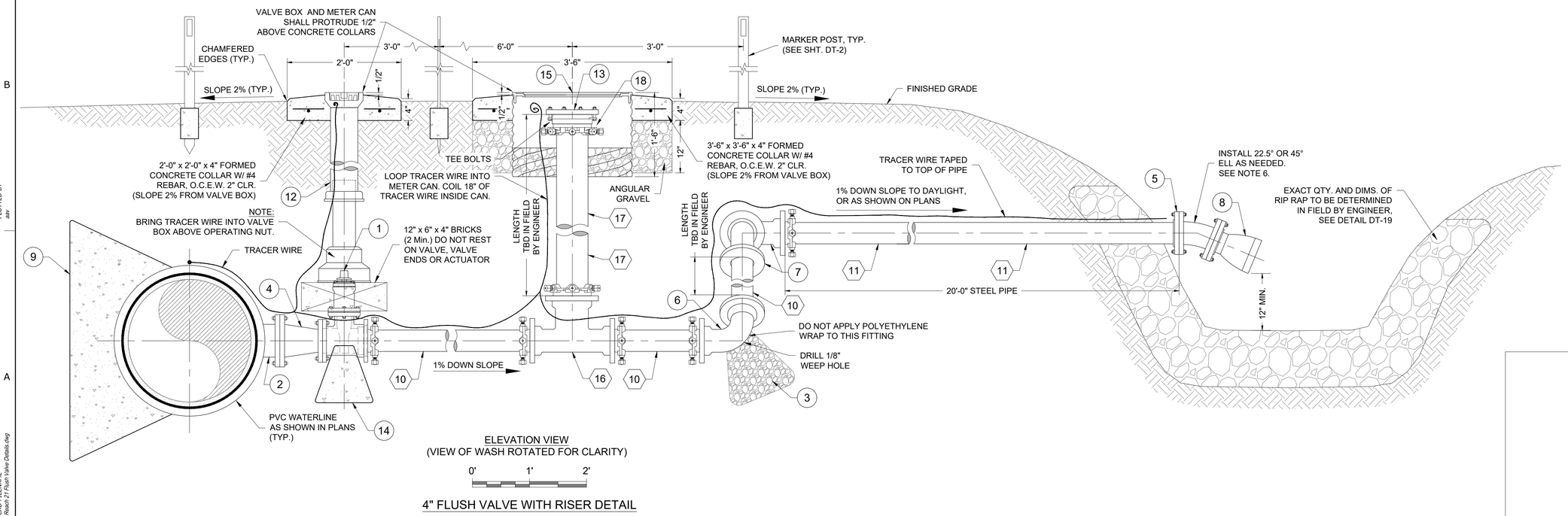
NOTE:
CONCRETE SHALL BE SCRIBED PRIOR TO CURING OR ETCHED AFTER CURING WITH A 4" GRINDER.

COLLAR SCRIBING DETAIL
NOT TO SCALE



PLAN VIEW





ELEVATION VIEW
(VIEW OF WASH ROTATED FOR CLARITY)

0' 1' 2'

4" FLUSH VALVE WITH RISER DETAIL

KEYED NOTES - 4" FLUSH VALVE WITH RISER

Item No.	Description
1	4" GATE VALVE, FL x MJ, 350 psi (SEE TYPICAL GATE VALVE DETAIL, SHEET DT-8)
2	24" x 6" (SHOWN) OR 20" x 6" MJ x FL REDUCING TEE, D.I., 250 psi
3	ROUNDED ROCK (2 CU. YD.)
4	6" x 4" FL x FL REDUCER, D.I., 250 psi
5	4" STEEL FLANGE, FLAT FACED, ANSI CLASS 150
6	4" 90° MJ ELL, D.I., 350 psi (ROTATED 45° TOWARDS FINISHED GRADE)
7	4" 45° MJ ELL, D.I., 350 psi
8	4" FLANGED RUBBER CHECK VALVE, ANSI CLASS 150
9	2'-0" x 2'-0" THRUST BLOCK
10	4" PVC PIPE, DR18
11	4" STEEL PIPE, STANDARD WALL
12	VALVE BOX SLIP TYPE WITH NON LOCKABLE CAST IRON COVER (SEE TYPICAL GATE VALVE DETAIL, SHEET DT-8)
13	6" BLIND FLANGE, FLAT FACED, ANSI CLASS 150
14	CONCRETE BLOCK SUPPORT, (SEE TYPICAL GATE VALVE DETAIL, SHEET DT-8)
15	24" DIA. HEAVY DUTY, TRAFFIC-RATED METER CAN W/ 20 3/8" Ø OPENING WITH CAST IRON LOCKING COVER AND FORMED CONCRETE COLLAR, (W/ #4 REBAR), DASHED FOR CLARITY
16	4" x 4" x 6" MJ BULLHEAD TEE OR 4" x 4" x 4" MJ TEE W/ 6" x 4" MJ REDUCER, D.I., 350 psi
17	6" PVC PIPE, DR18
18	6" ANSI CLASS 125 FLANGE ADAPTER, MEGAFLANGE SERIES 2100 W/ TEE BOLTS POINTED UP, OAE, 235 psi
21	6" x 4" FL x FL REDUCER, D.I., 250 psi

NOTES:
1. ALL NON STAINLESS METALLIC PIPE, VALVES AND FITTINGS SHALL BE FBE-COATED, INTERIOR AND EXTERIOR. ALL NON STAINLESS METALLIC PIPE IN CONTACT WITH SOIL SHALL ALSO BE COLD APPLIED TAPE-COATED PER SPECIFICATIONS.
2. ORIENTATION AND LOCATION OF OUTLET TO BE DETERMINED IN FIELD BY ENGINEER.
3. APPLY CATHODIC PROTECTION TO ALL BURIED METALLIC WATER-CARRYING COMPONENTS LOCATED WITHIN CORROSIVE SOIL ZONES, AS DESIGNATED IN THE PLANS AND/OR SPECIFICATIONS.
4. ALL NON STAINLESS STEEL PIPE AND FITTINGS SHALL BE STANDARD WALL. ALL STAINLESS STEEL PIPE AND FITTINGS SHALL HAVE A WORKING PRESSURE OF AT LEAST 350 psi, UNLESS OTHERWISE NOTED.
5. ALL COMPONENTS SHALL REMAIN WITHIN THE PERMANENT RIGHT-OF-WAY. 4" PVC PIPING PARALLEL TO MAIN LINE SHALL BE ANGLED SLIGHTLY TOWARD MAIN LINE, AS NEEDED, SO THAT RUBBER CHECK VALVE REMAINS WITHIN PERMANENT RIGHT-OF-WAY.
6. INSTALL 22.5° OR 45° ELL AT PIPE OUTLET AS NEEDED TO DIRECT WATER FLOW INTO THE RIPRAP. DO NOT ALLOW WATER OUTFLOW TO HIT UNARMORED SOIL.
7. ALL MATERIALS RATED TO AT LEAST MAINLINE PIPE PRESSURE RATING, UNLESS OTHERWISE NOTED.
8. SEE TABLE THIS SHEET FOR ORIFICE PLATE DRILLING.
9. MECHANICAL JOINTS OMITTED FROM ISOMETRIC VIEWS FOR CLARITY.
10. STATIONS OF TEES AND HEIGHT OF RISERS FOR FLUSH VALVES SHOWN ON PLAN AND PROFILE SHEETS ARE APPROXIMATE. CONTRACTOR SHALL ENSURE FLUSH DRAIN LINE OUTFALLS HAVE MINIMUM REQUIRED CLEARANCE TO RIPRAP AT WASH BOTTOMS. CONTRACTOR MAY ADJUST TEE LOCATIONS AND/OR RISER HEIGHTS AS NEEDED TO PROVIDE ADEQUATE OUTFALL HEIGHT, DRAIN PIPE SLOPE, AND COVER.
11. CONTRACTOR SHALL LEAVE A 3/4" MIN. TO 1" MAX. GAP BETWEEN PIPE END AND FLANGE FACE INSIDE MJ FLANGE COUPLING, TO FACILITATE FUTURE DISASSEMBLY.

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NEW MEXICO

CUTTER LATERAL - REACH 21
WATER PIPELINE

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T Tadano
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M Howard / A Vogenthaler
DRAWN
A Robertson
CHECKED
TECH. APPR.
APPROVED
FARMINGTON, NM 2017-12-07

REACH 21 PIPELINE

4-INCH FLUSH VALVE WITH RISER DETAIL

SHEET DT-10
SHEET of

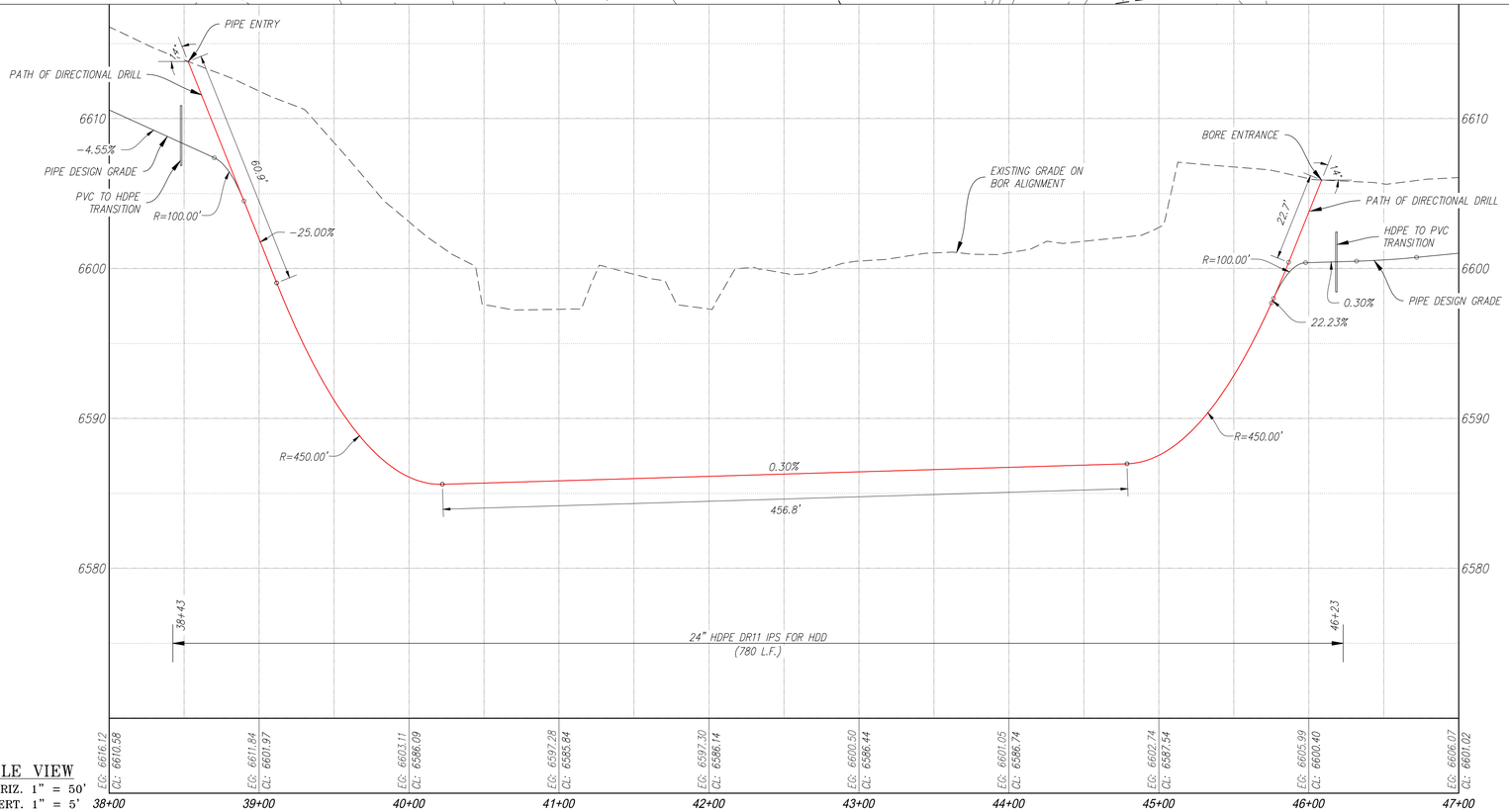
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PLAN VIEW



PROFILE VIEW
SCALE: HORIZ. 1" = 50'
SCALE: VERT. 1" = 5'

NOTES:
1. HORIZONTAL DIRECTIONAL DRILLING
   MINIMUM ALLOWABLE BEND RADIUS = 300'
2. OPEN CUT
   MINIMUM ALLOWABLE BEND RADIUS = 100'
3. HDPE PIPE TO BE PRESSURE TESTED
   ABOVE GROUND PRIOR TO INSTALLATION
   PER TECHNICAL SPECIFICATIONS.

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M Howard / A Vogenthaler
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A Robertson
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APPROVED
NAME (MEDIAL) - TITLE
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REACH 21 PIPELINE

WASH CROSSING STA
42+02 PIPELINE HDD
DETAIL

SHEET DT-11
SHEET of

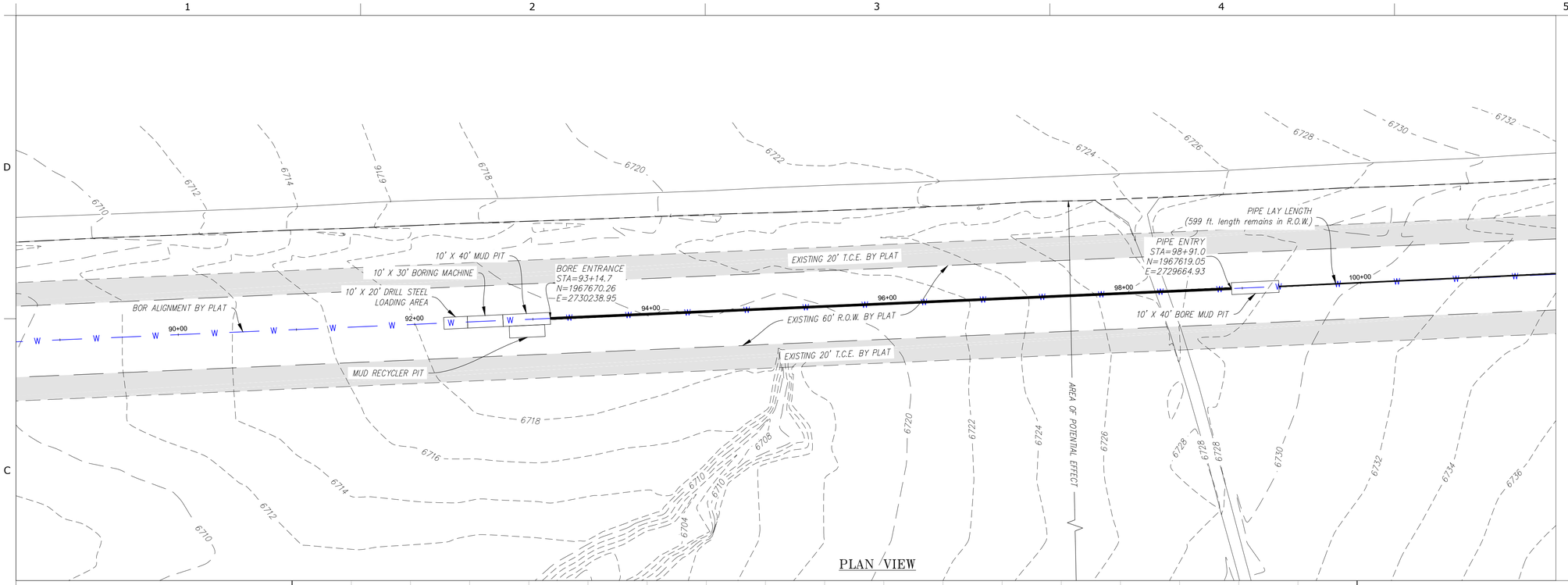
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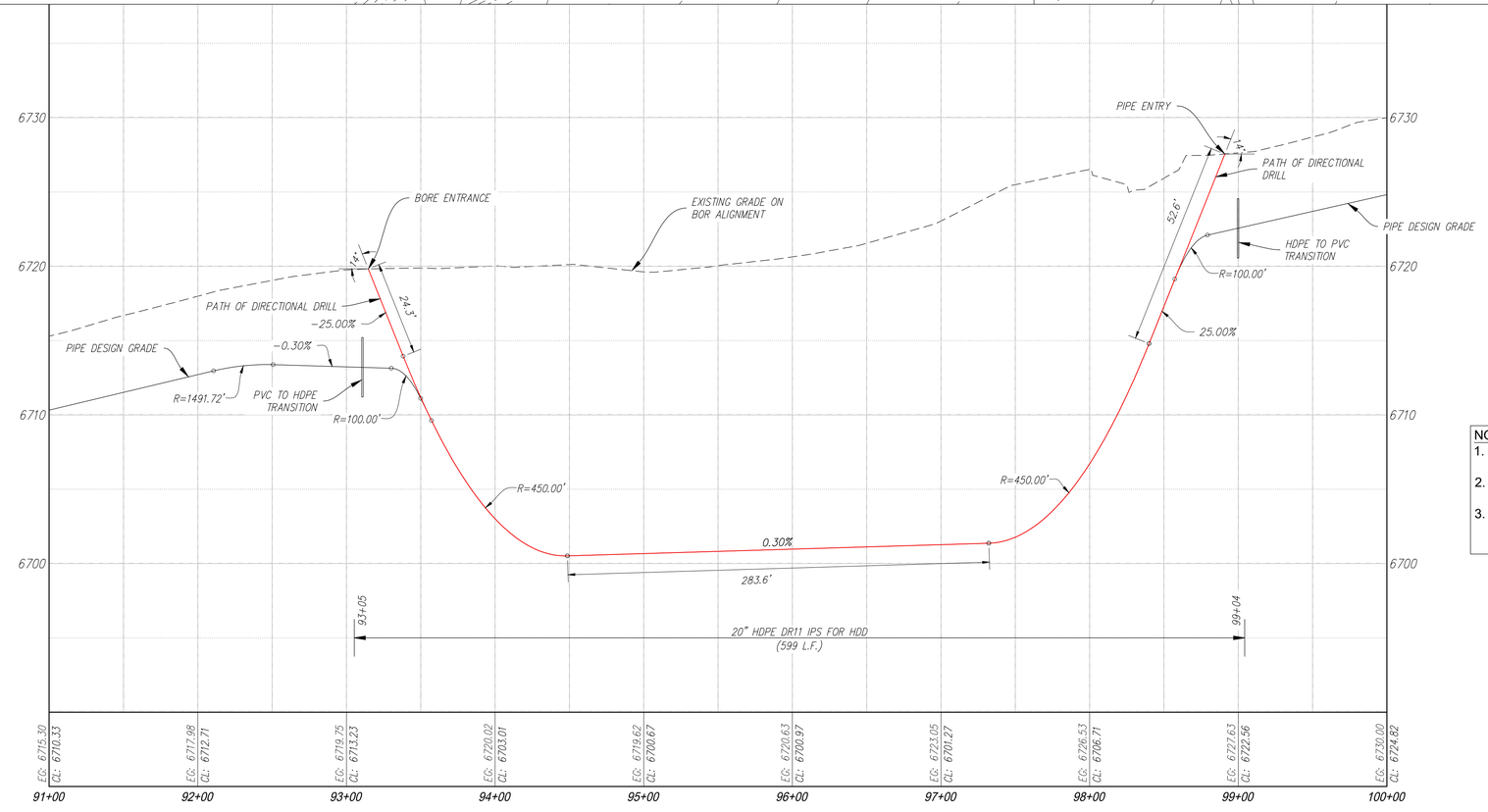
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PLAN VIEW



PROFILE VIEW
SCALE: HORIZ. 1" = 50'
SCALE: VERT. 1" = 5'

NOTES:
1. HORIZONTAL DIRECTIONAL DRILLING MINIMUM ALLOWABLE BEND RADIUS = 300'
2. OPEN CUT MINIMUM ALLOWABLE BEND RADIUS = 100'
3. HDPE PIPE TO BE PRESSURE TESTED ABOVE GROUND PRIOR TO INSTALLATION PER TECHNICAL SPECIFICATIONS.

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FARMINGTON, NM 2017-12-07

REACH 21 PIPELINE

WASH CROSSING STA 95+37 PIPELINE HDD DETAIL

SHEET DT-12

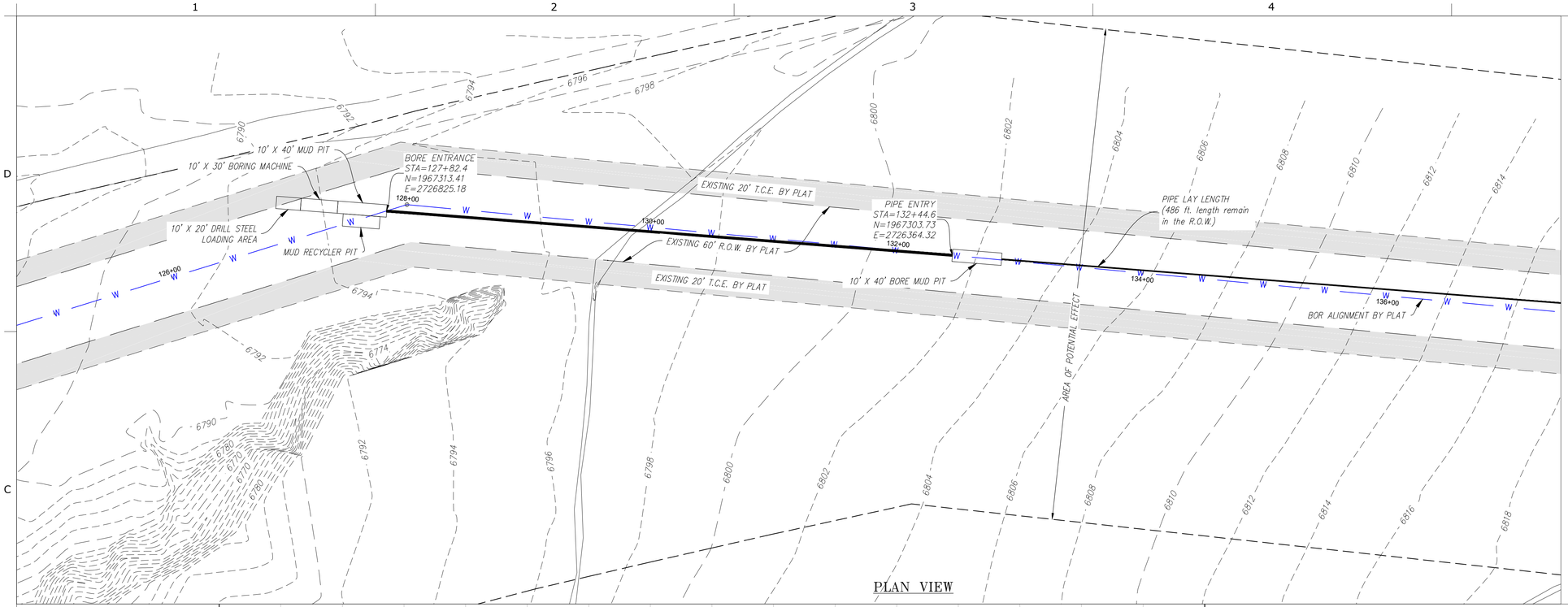
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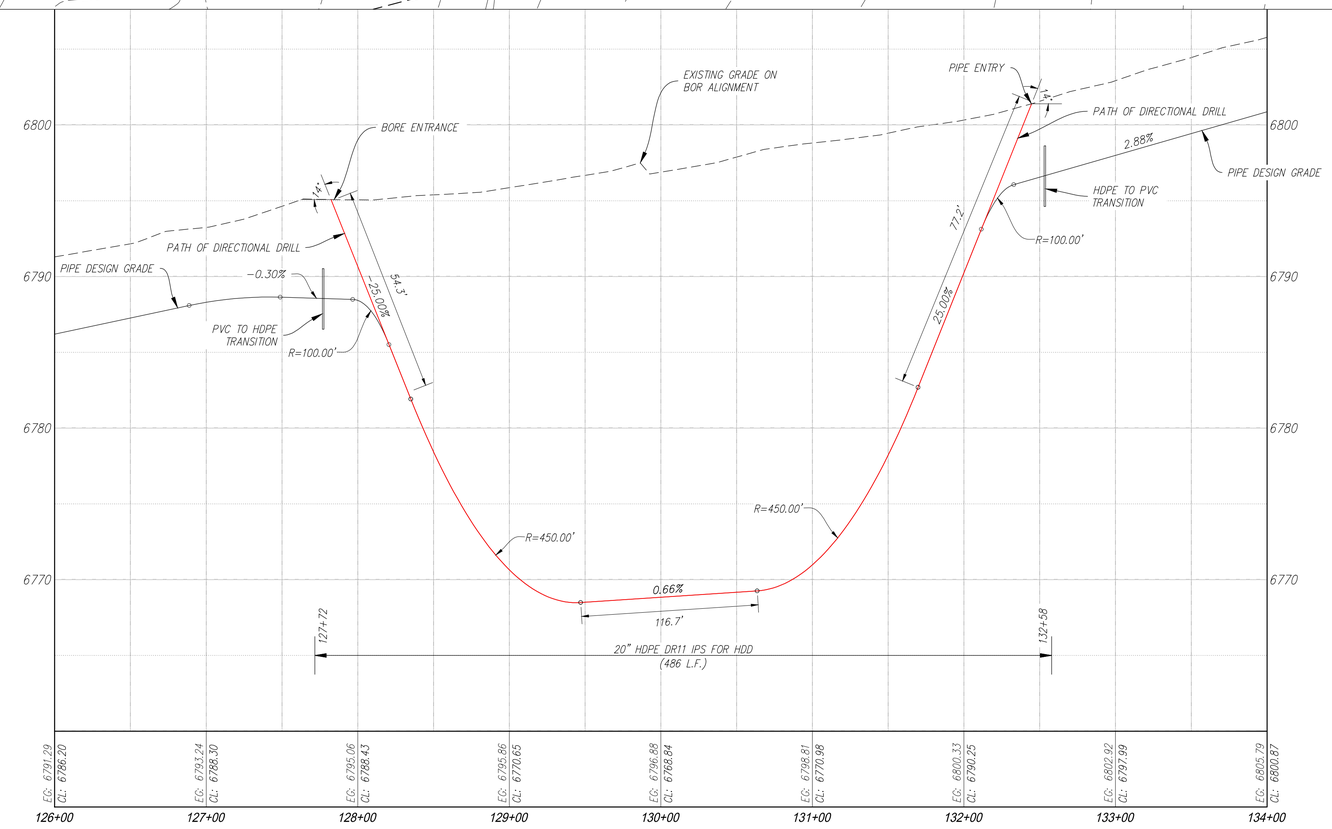
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PROFILE VIEW
SCALE: HORIZ. 1" = 50'
SCALE: VERT. 1" = 5'

NOTES:
1. HORIZONTAL DIRECTIONAL DRILLING MINIMUM ALLOWABLE BEND RADIUS = 300'
2. OPEN CUT MINIMUM ALLOWABLE BEND RADIUS = 100'
3. HDPE PIPE TO BE PRESSURE TESTED ABOVE GROUND PRIOR TO INSTALLATION PER TECHNICAL SPECIFICATIONS.

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REACH 21 PIPELINE

WASH CROSSING STA 129+92 PIPELINE HDD DETAIL

SHEET DT-13

SHEET of

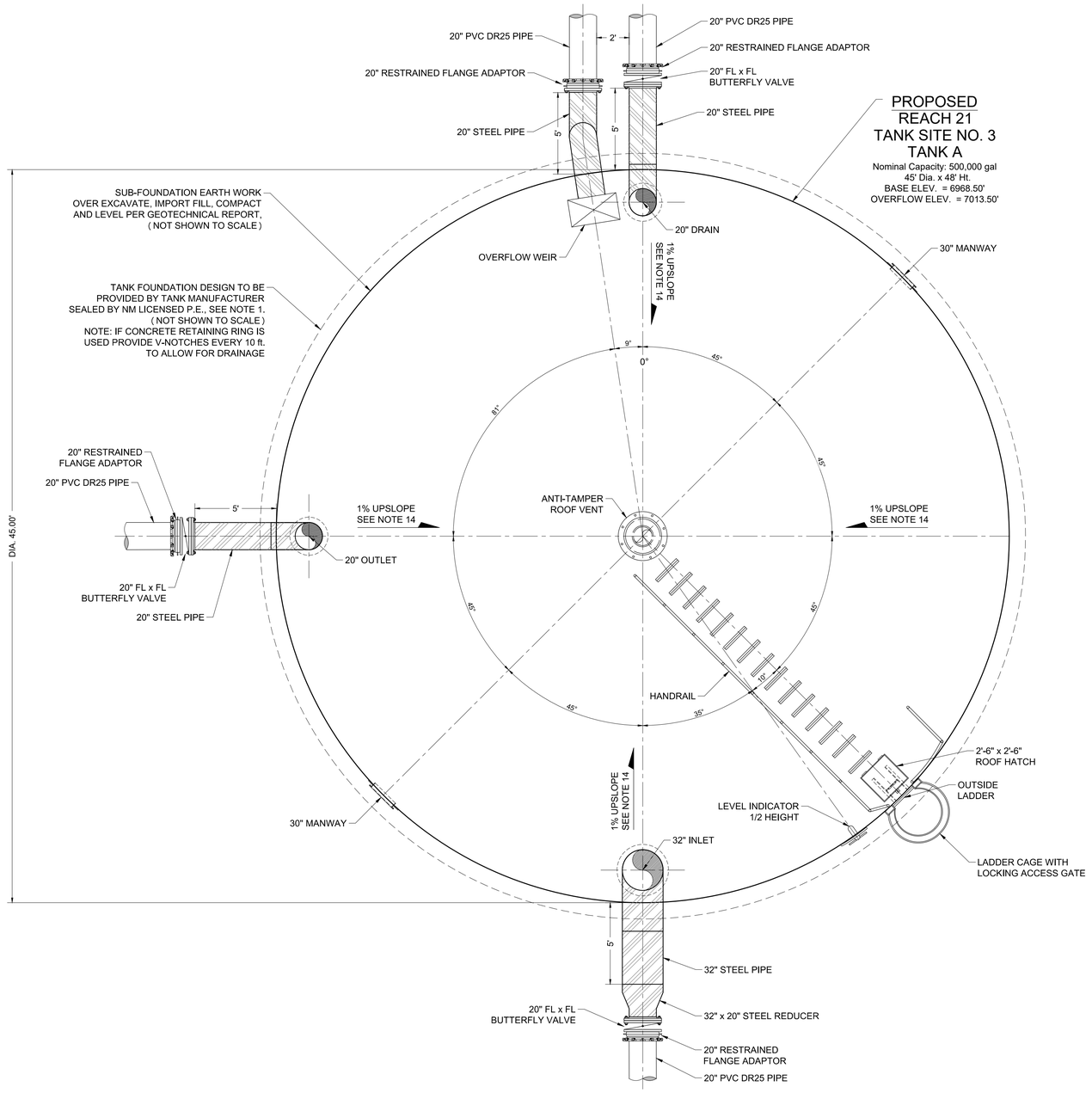
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NOTES:

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3. IF CONCRETE MAT FOUNDATION IS USED, TANK SHALL BEAR ON A MINIMUM OF 18 INCHES OF ENGINEERED FILL. ENGINEERED FILL SHALL EXTEND 3 FEET BEYOND MAT, MEASURED AT BOTTOM OF OVER-EXCAVATION. INCREASE DEPTH OF OVER-EXCAVATION, IF NECESSARY, TO ENSURE ENGINEERED FILL BEARS UNIFORMLY ON CUT; DO NOT ALLOW TRANSITION FROM CUT TO FILL TO PASS UNDERNEATH OR WITHIN 5 HORIZONTAL FEET OF TANK. REFER TO GEOTECHNICAL REPORT BY NV5 #444317-2360000.02 DATED JANUARY 9, 2017 FOR SUBSURFACE INFORMATION, OVER EXCAVATION REQUIREMENTS, SUBGRADE PREPARATION, AND STRUCTURAL FILL & COMPACTION. ENGINEERED FILL SHALL BE COMPACTED TO 95% MIN. MODIFIED PROCTOR.
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5. TANK COLOR TO BE FOREST GREEN.
6. TANK APPURTENANCES SHOWN IN ELEVATION VIEW HAVE BEEN ROTATED INTO VIEW FOR DEPICTION PURPOSES.
7. FOR GLASSED FUSED TO BOLTED STEEL TANKS, ALL STEEL PIPE AND FITTINGS SHALL BE FBE COATED, INTERIOR AND EXTERIOR.
8. ALL STEEL PIPE AND FITTINGS UNDERNEATH AND WITHIN 5' OF TANKS OR BUILDINGS SHALL BE SHOP WELDED AND COATED, X-RAY TESTED AND PRESSURE TESTED PRIOR TO POURING FOUNDATIONS.
9. ALL STEEL PIPE AND FITTINGS SHALL BE STANDARD WALL UNLESS OTHERWISE NOTED.
10. SANDBLASTING WASTE SHALL BE DISPOSED OF OFF-SITE AT AN APPROVED SOLID WASTE FACILITY AT THE CONTRACTOR'S EXPENSE.
11. ALL BASE AND OVERFLOW ELEVATIONS PROVIDED IN THESE DRAWINGS ARE APPROXIMATE. CONTRACTOR SHALL FIELD SURVEY ELEVATION OF ENWP PHASE 3 DZ REGULATING (SE) TANK OVERFLOW WEIR AND ENSURE BOTH TANK'S WEIR ELEVATIONS MATCH WITHIN A TOLERANCE OF ±1/2 INCHES.
12. ALL STEEL PIPE FLANGES SHALL BE ANSI CLASS 150.
13. EXACT ORIENTATION OF ALL TANK FEATURES AND PIPE PENETRATIONS TO BE DETERMINED IN THE FIELD BY THE ENGINEER. TANK MANUFACTURER SHALL CONFIRM ALL LOCATIONS W/ ENGINEER PRIOR TO FABRICATION. SOME FEATURES MAY BE ROTATED IN ELEVATION VIEW FOR CLARITY.
14. FOUNDATION AND FLOOR SLOPE UPWARDS 1% TOWARD CENTER TO PREVENT "OILCANNING".
15. PASSIVE CATHODIC PROTECTION REQUIRED.



PLAN VIEW

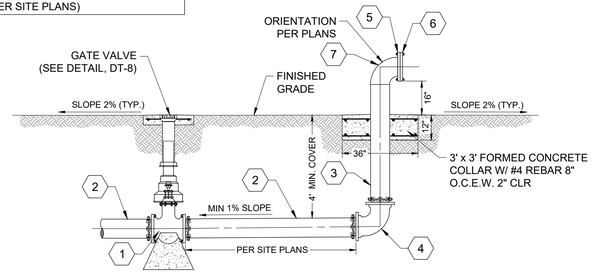
REACH 21
TANK SITE NO. 3
TANK A DETAIL

N

0' 4' 8'

KEYED NOTES 8" TEMPORARY TANK HOOK-UP	
Item No.	Description
1	8" MJ x MJ GATE VALVE, 250 psi
2	8" PVC PIPE, DR18
3	8" STEEL PIPE, STANDARD WALL
4	8" MJ x MJ 90° ELL, D.I., 350 psi
5	8" STEEL FLANGE, WELDED
6	8" BLIND FLANGE WITH GASKET
7	8" 90° ELL, STEEL, WELDED (ORIENTATION PER SITE PLANS)

NOTES:
1. ALL MATERIALS SHALL BE RATED TO AT LEAST 150 psi, UNLESS OTHERWISE NOTED.
2. ALL METALLIC PIPE, VALVES AND FITTINGS SHALL BE FBE-COATED, INTERIOR AND EXTERIOR. ALL METALLIC PIPE IN CONTACT WITH SOIL SHALL ALSO BE COLD APPLIED TAPE-COATED, PER SPECIFICATIONS.
3. FLANGES SHALL BE ANSI CLASS 150 (STEEL) OR ANSI CLASS 125 (IRON).
4. ALL STEEL PIPE AND FITTINGS SHALL BE STANDARD WALL.
5. VALVE BOX LID AND ALL ABOVE GROUND STEEL COMPONENTS SHALL BE COATED BLUE.



TEMPORARY TANK HOOK-UP DETAIL

NOT TO SCALE

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NAVAJO-GALLUP WATER SUPPLY PROJECT
NEW MEXICO

CUTTER LATERAL - REACH 21
WATER PIPELINE

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NO.	DATE	REVISION	BY	APVD

T Tadano
DESIGNED
M Howard / A Vogenthaler
DRAWN
A Robertson
CHECKED
TECH. APPR.
APPROVED
FARMINGTON, NM 2017-12-07

REACH 21 PIPELINE

TANK DETAILS
(1 of 2)

SHEET DT-14

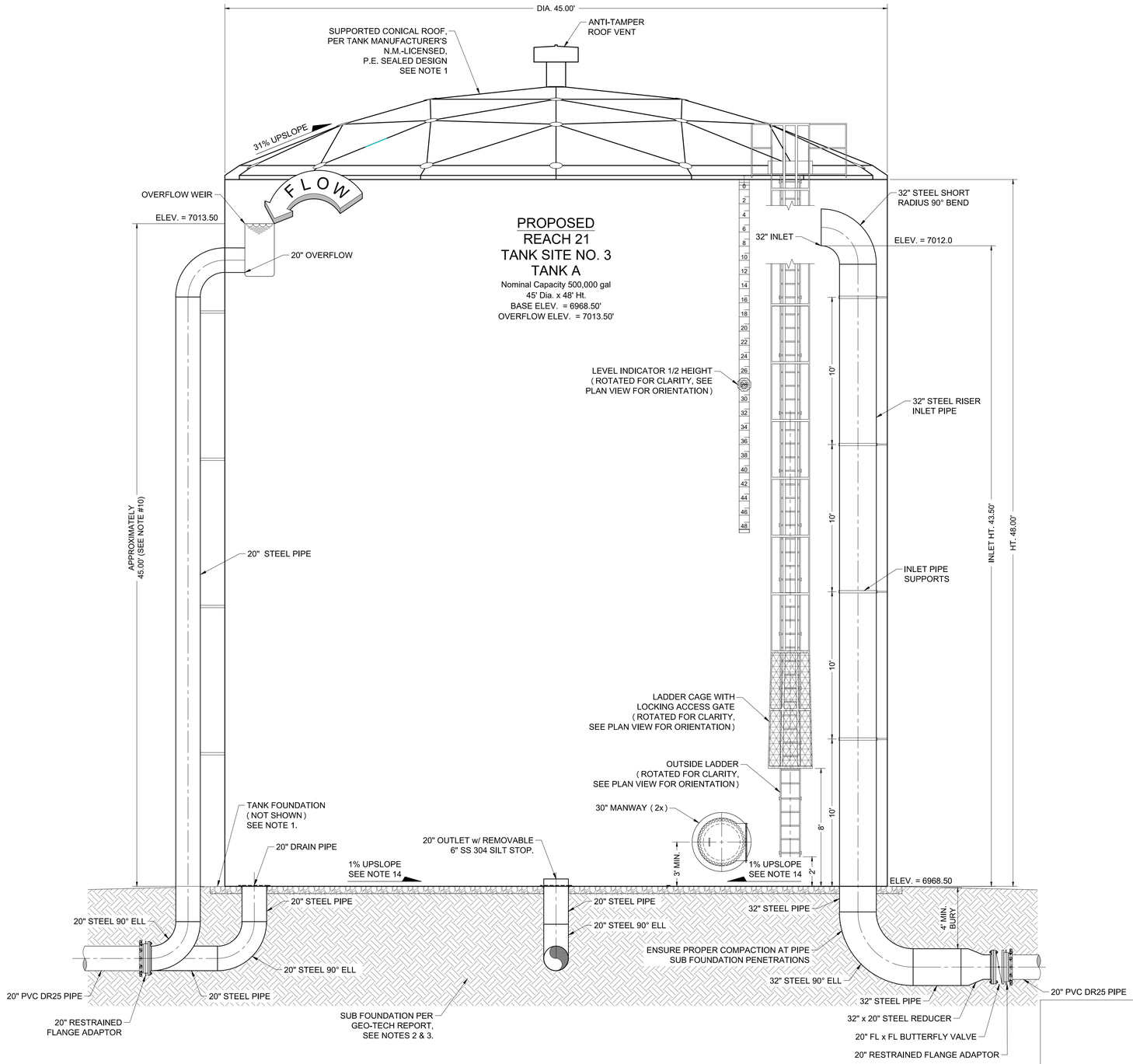
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DATE AND TIME PLOTTED
12/7/2017
PLOTTED BY
atvr

CAD SYSTEM
AUTOCAD
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ELEVATION VIEW A-A

REACH 21
TANK SITE NO. 3
TANK A DETAIL

0' 4' 8'

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NEW MEXICO

CUTTER LATERAL - REACH 21
WATER PIPELINE

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NO.	DATE	REVISION	BY	APVD

T Tadano — DESIGNED
M Howard / A Vogenthaler — DRAWN
A Robertson — CHECKED
TECH. APPR.
APPROVED — ADMIN APPROVAL — TITLE
FARMINGTON, NM — 2017-12-07

REACH 21 PIPELINE

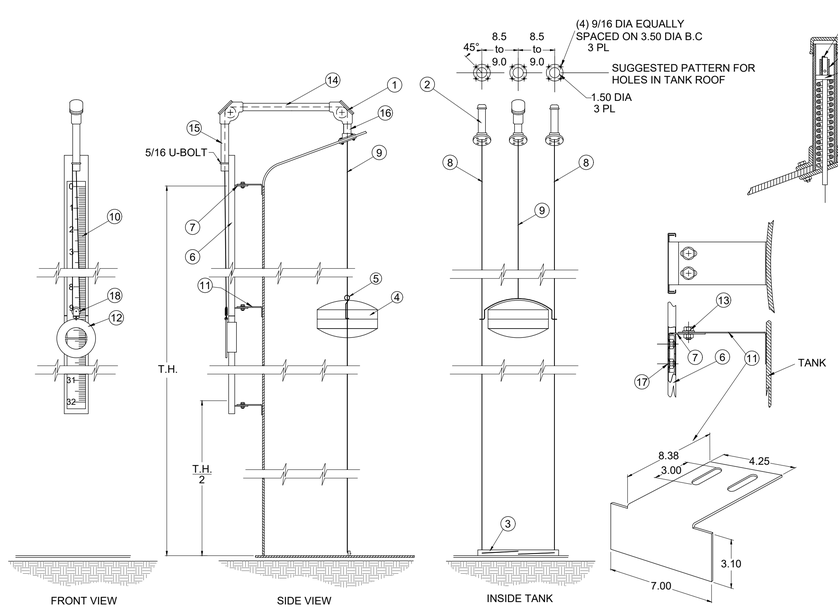
TANK DETAILS (2 of 2)

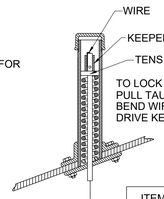
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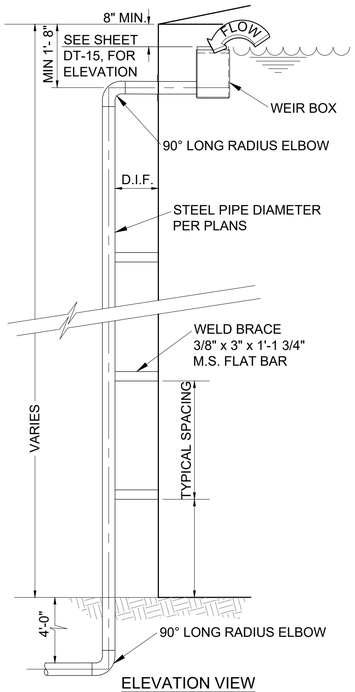
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ITEM	NAME	MATERIAL
1	ELBOW, 90°	TEMPERATURE ULTEM PULLEY A356 ALUMINUM WITH HIGH
2	TOP ANCHOR TENSIONER	WITH STAINLESS STEEL SPRING HDG STEEL TENSIONER ASSEMBLY
3	BOTTOM ANCHOR	STAINLESS STEEL ANGLE
4	S/S FLOAT- 16#	WELD, FOAM FILLED .045H STAINLESS STEEL
5	CABLE FASTENERS	304 STAINLESS STEEL CRIMP & THIMBLE
6	GAUGE BOARD	16 GA HDG "C" CHANNEL
7	STD. TP BRACKETS	STAINLESS STEEL
8	FLOAT GUIDE WIRE	1/8" - 304 STAINLESS STEEL
9	FLOAT CABLE	3/32" - 304 STAINLESS STEEL
10	GAGE TAPE	ADHESIVE BACKED VINYL
11	BRACKET	STAINLESS STEEL
12	ROUND TARGET-9.5#	RED, POWDER COATED, DUCT. IRON
13	BOLT & NUT SETS	304 STAINLESS STEEL
14	PIPE (INCLUDED IN KIT)	1-1/2" x 16 HDG PIPE
15	PIPE (INCLUDED IN KIT)	1-1/2" x 14 HDG PIPE W/ PLUG
16	PIPE (INCLUDED IN KIT)	1-1/2" x 4 HDG PIPE
17	TRUSS HEAD S/S BOLTS, NYLOC NUTS & WASHERS	
18	1/2 TRAVEL PULLEY	STAINLESS STEEL

TYPICAL HALF HEIGHT LIQUID INDICATOR DETAILS
NOT TO SCALE

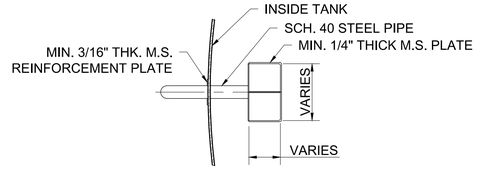


ELEVATION VIEW

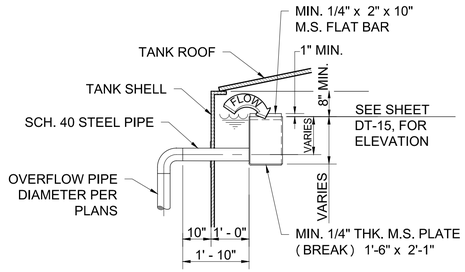
TYPICAL TANK OVERFLOW DETAIL
NOT TO SCALE

SEE TANK PLAN AND ELEVATION SHEETS DT-14 & DT-15, FOR PIPE SIZE, HEIGHT AND ELEVATION.

NOTE:
1. DIMENSIONS INDICATING SEPARATION BETWEEN WEIR FROM ROOF ARE MINIMUMS ONLY. ACTUAL DIMENSIONS MAY BE GREATER TO ACCOMMODATE SLOSH WAVE, AS CALCULATED BY TANK MANUFACTURER.
2. TANK MANUFACTURER SHALL PROVIDE DESIGN CALCULATIONS AND FABRICATION DRAWINGS SEALED BY A NEW MEXICO LICENSED PROFESSIONAL ENGINEER.



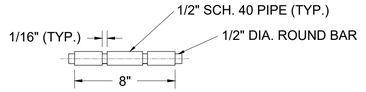
PLAN VIEW



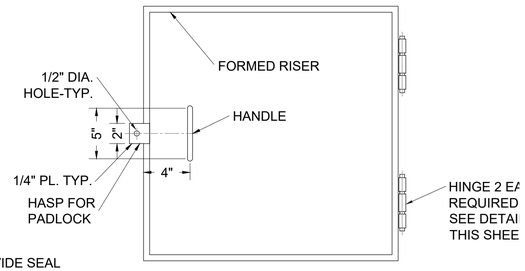
ELEVATION VIEW

TYPICAL OVERFLOW WEIR DETAIL
NOT TO SCALE

NOTE:
DIMENSIONS OF WEIR AND APPURTENANCES PROVIDED ARE MINIMUMS. ACTUAL DIMENSIONS MAY BE LARGER TO PROVIDE FOR DESIGN FLOW RATES SPECIFIED IN THE TECHNICAL SPECIFICATIONS. ACTUAL WEIR DIMENSIONS SHALL BE PROVIDED AS PART OF THE TANK MANUFACTURER'S PROFESSIONAL ENGINEER SEALED DESIGN.

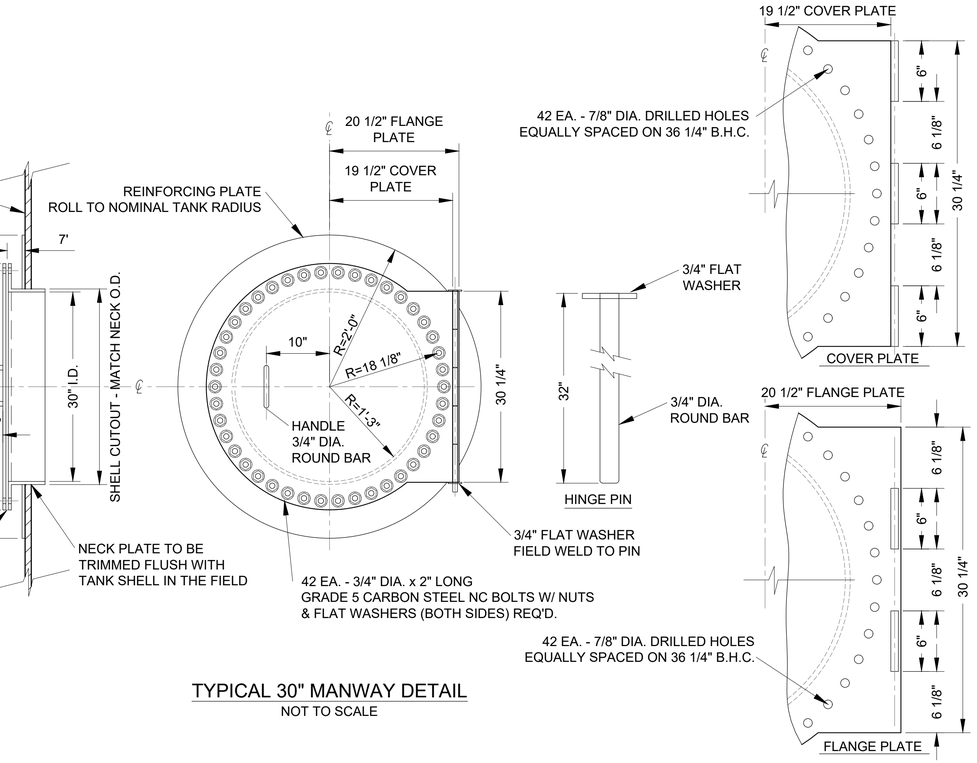


HINGE DETAIL - 2 EA. REQ'D



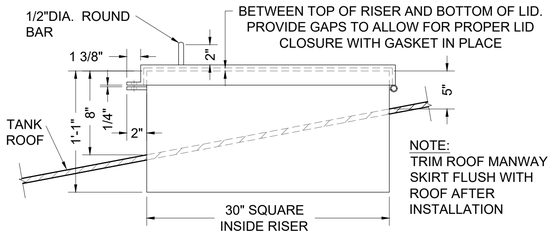
PLAN VIEW

30" SQUARE ROOF HATCH DETAIL
NOT TO SCALE



TYPICAL 30" MANWAY DETAIL
NOT TO SCALE

NOTE:
INSTALL CHANNEL GASKET TO PROVIDE SEAL BETWEEN TOP OF RISER AND BOTTOM OF LID. PROVIDE GAPS TO ALLOW FOR PROPER LID CLOSURE WITH GASKET IN PLACE



ELEVATION VIEW

30" SQUARE ROOF HATCH DETAIL
NOT TO SCALE

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WATER PIPELINE

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T Tadano — DESIGNED
M Howard / A Vogenthaler — DRAWN
A Robertson — CHECKED
TECH. APPR.
APPROVED
FARMINGTON, NM — 2017-12-07

REACH 21 PIPELINE

TYPICAL WATER STORAGE TANK DETAILS (1 of 2)

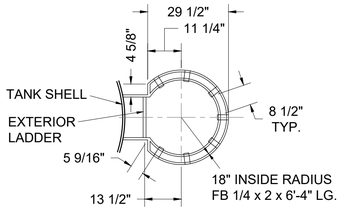
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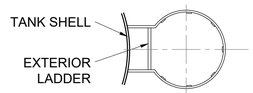
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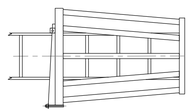
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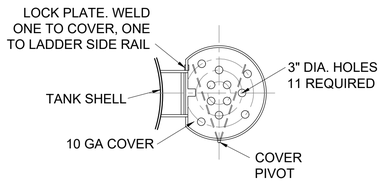
VIEW - LOOKING UP
NOT TO SCALE



SECTION DETAIL
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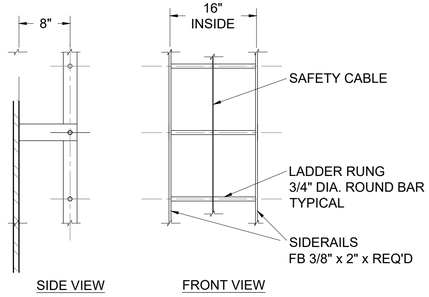


ROTATED 90 DEGREES

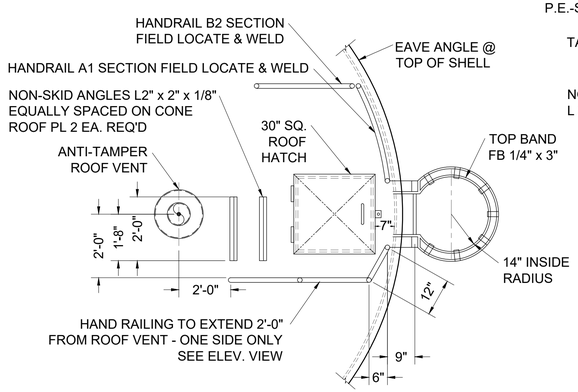


SIDE OPENING SECURITY DOOR DETAIL
NOT TO SCALE

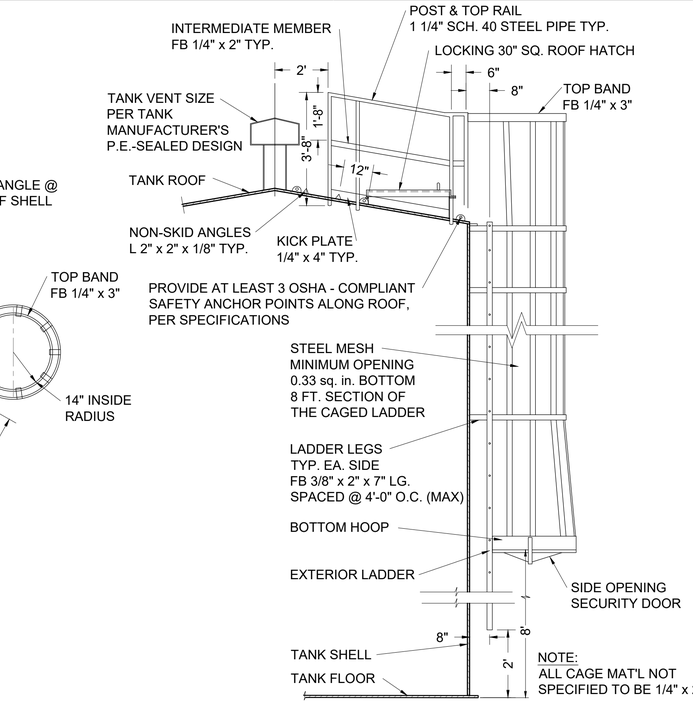
EXTERIOR CAGED LADDER DETAILS
NOT TO SCALE



LADDER DETAILS
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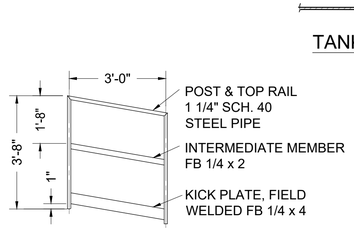


PLAN VIEW
NOT TO SCALE

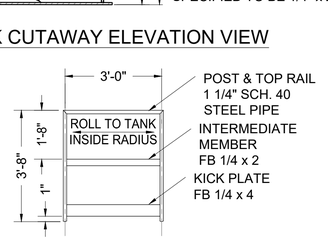


NOTE:
ALL CAGE MAT'L NOT SPECIFIED TO BE 1/4" x 2"

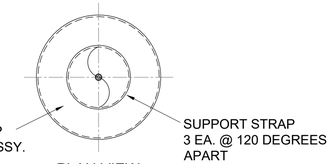
TANK CUTAWAY ELEVATION VIEW



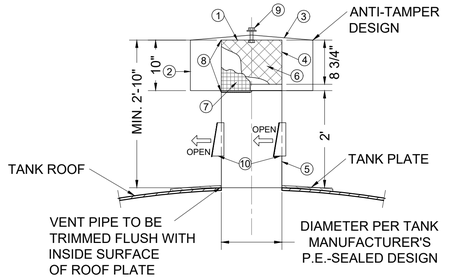
HANDRAIL B2 DETAIL
NOT TO SCALE



HANDRAIL A1 DETAIL - ONE REQ'D
NOT TO SCALE



PLAN VIEW

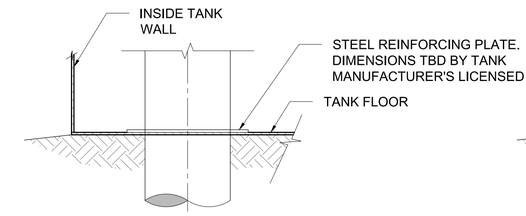


VERTICAL C/L OF TANK AND VENT WITH FROST PROOF DOORS
NOT TO SCALE

BILL OF MATERIALS

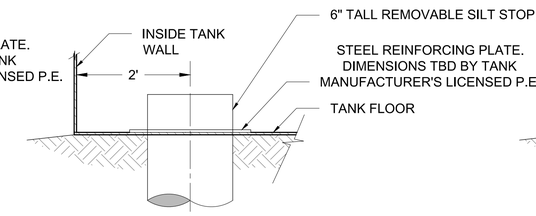
ITEM	QTY.	DESCRIPTION
①	1	3/16" THK. M.S. PLATE (CUT) 1' - 0" 3/4" Ø
②	1	10 GA. H.R. SHEET (ROLL) 10" x 6' - 3 3/8"
③	1	12 GA. H.R. SHEET (CUT) 2' - 0" Ø
④	3	3/16" x 1" M.S. FLAT BAR x 8 9/16"
⑤	1	1/4" THK. M.S. PLATE (ROLL) 16" x 3' - 2 1/2"
⑥	1	3/4 - #9 FLAT EXP. METAL (ROLL) 8 3/4" x 3' - 4"
⑦	1	24 MESH SCREEN (SST) 12" x 3' - 7"
⑧	2	STAINLESS STEEL WORM CLAMP (SST) 3/4" x 3' - 7"
⑨	1	1/2" x 3" HEX BOLT WITH (GRADE 2) NUT, & FLAT WASHER
⑩	4	6" x 8" FREEZE PROTECTION DOOR

12" VERTICAL ROOF DETAIL
NOT TO SCALE



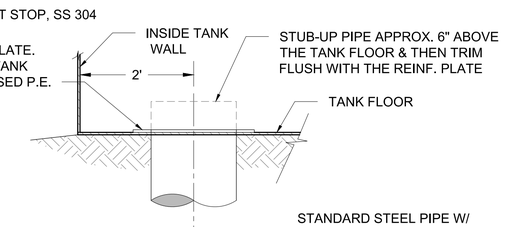
ELEVATION VIEW

32" INLET DETAIL
NOT TO SCALE



ELEVATION VIEW

20" OUTLET DETAIL
NOT TO SCALE



ELEVATION VIEW

20" TANK FLOOR DRAIN DETAIL
NOT TO SCALE

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NEW MEXICO

CUTTER LATERAL - REACH 21
WATER PIPELINE

Preliminary
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REVISION

T Tadano
DESIGNED
M Howard / A Vogenthaler
DRAWN
A Robertson
CHECKED
TECH. APPR.
APPROVED
(BOR OFFICIAL) - TITLE
FARMINGTON, NM 2017-12-07

REACH 21 PIPELINE

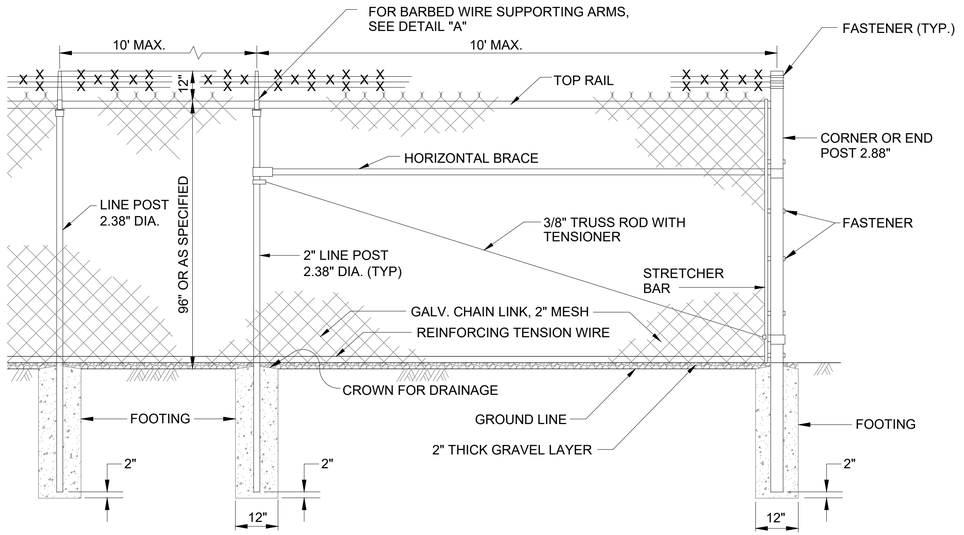
TYPICAL WATER STORAGE TANK DETAILS (2 of 2)

SHEET DT-17

SHEET of

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alvr

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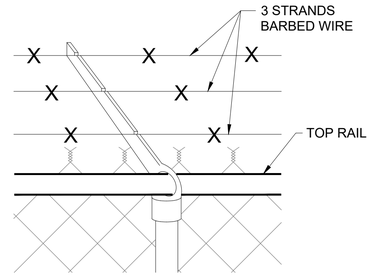


CHAIN LINK FENCE

NOT TO SCALE

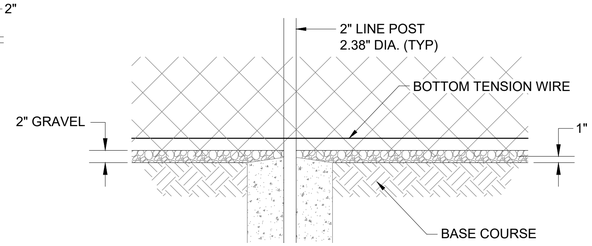
NOTES:

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



DETAIL "A" SUPPORTING ARM & BARBED WIRE

NOT TO SCALE



BASE COURSE AND GRAVEL DETAIL

NOT TO SCALE

GATE POST

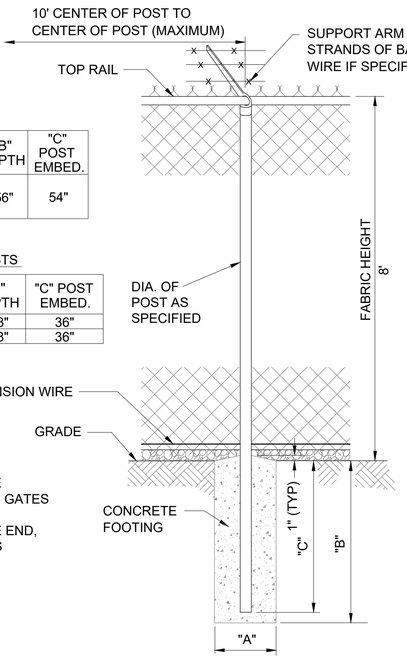
GATE LEAF WIDTH	GATE POST (OD)	FABRIC HEIGHT	"A" DIAM	"B" DEPTH	"C" POST EMBED.
10'	4"	8'	16"	56"	54"

LINE AND TERMINAL POSTS

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

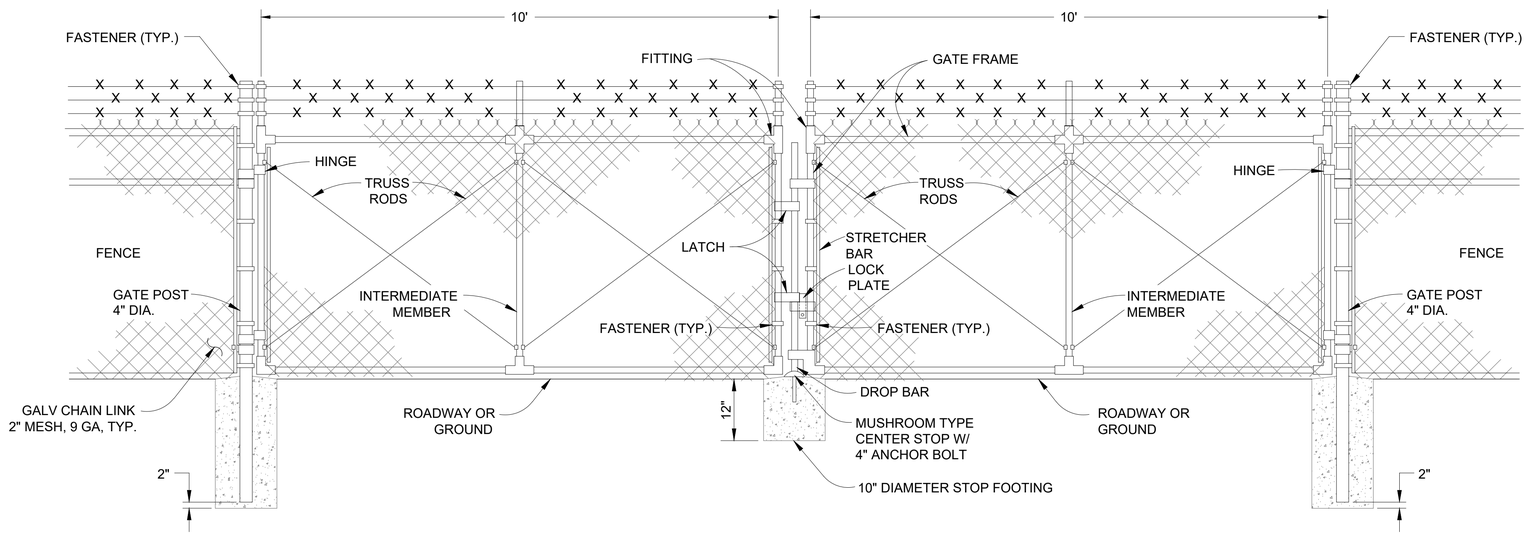
NOTES:

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



CHAIN LINK FENCE FOUNDATION

NOT TO SCALE



20' DOUBLE SWINGING VEHICLE GATE

NOT TO SCALE

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NEW MEXICO

CUTTER LATERAL - REACH 21

PIPELINE

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T Tadano
DESIGNED
M Howard / A Vogenthaler
DRAWN
A Robertson
CHECKED
TECH. APPR.
APPROVED
ADMIN APPROVAL — TITLE
FARMINGTON, NM 2017-12-07

REACH 21 PIPELINE

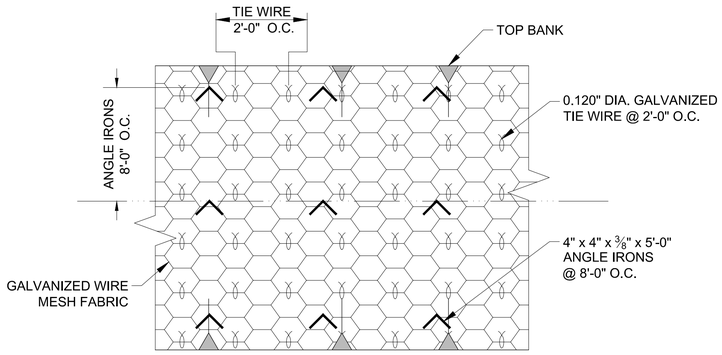
STANDARD FENCE DETAILS

SHEET DT-18

SHEET of

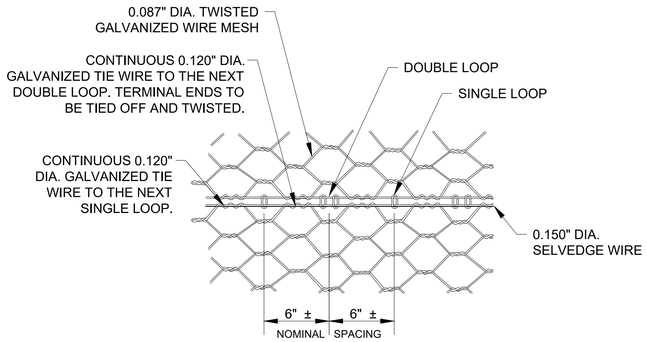
DATE AND TIME PLOTTED
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CAD FILENAME
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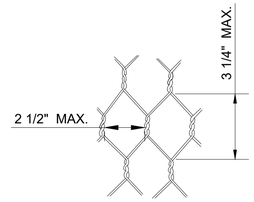
TYP. 18" RIP-RAP CAGE & ANCHORING

NOT TO SCALE



STANDARD JOINT CONNECTION DETAIL

NOT TO SCALE



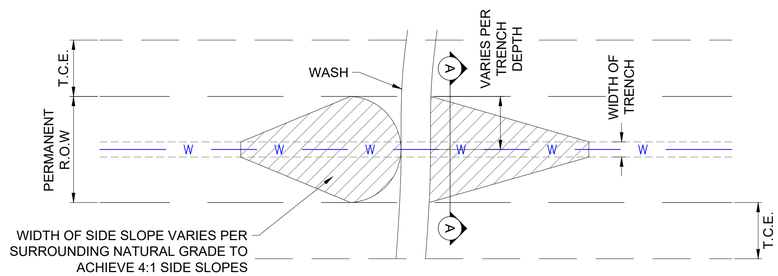
TWISTED MESH MATTRESS

NOT TO SCALE

CROSS SECTION

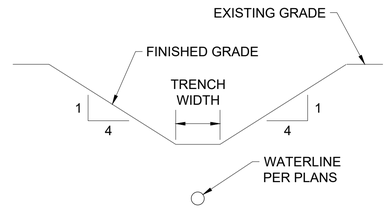
TYPICAL 18" RIP-RAP DETAIL

NOT TO SCALE



WASH CROSSING GRADING DETAIL

NOT TO SCALE



SECTION A-A

NOTE:

1. ALL GRADING MUST REMAIN WITHIN TEMPORARY CONSTRUCTION EASEMENT.

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REACH 21 PIPELINE

EROSION CONTROL DETAILS (1 of 2)

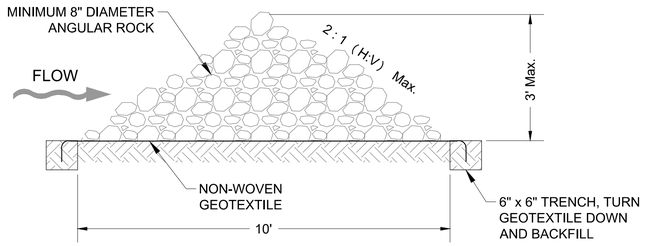
SHEET DT-19

SHEET DT-19

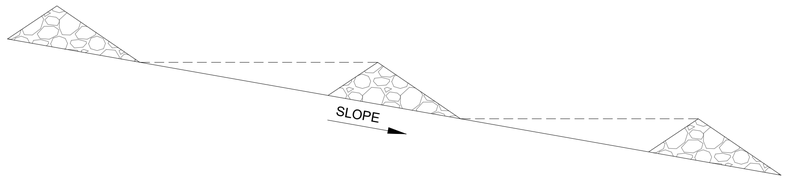
DATE AND TIME PLOTTED
12/7/2017
PLOTTED BY
atrr

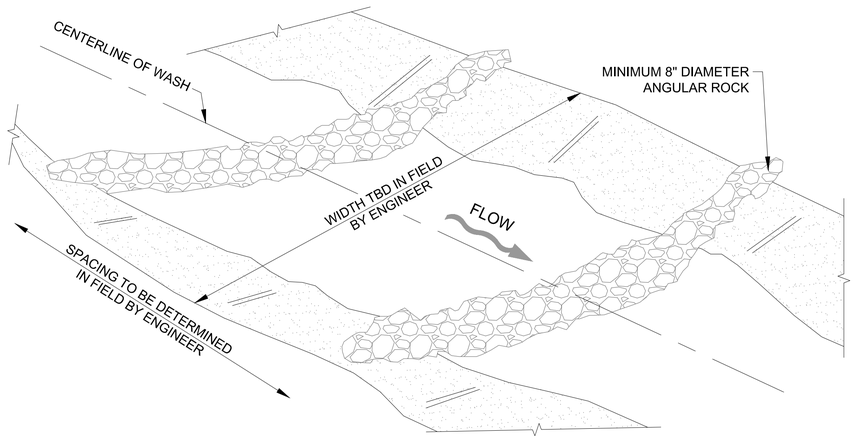
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TYPICAL ROCK DAM SECTION

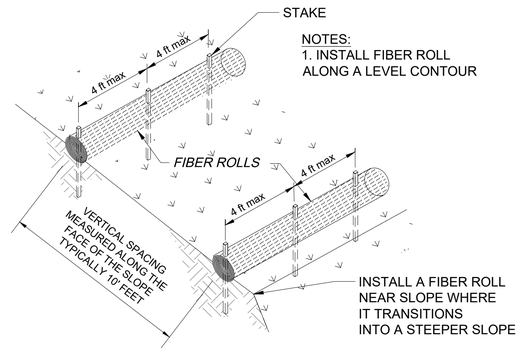




ISOMETRIC VIEW

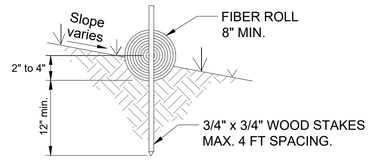
ROCK CHECK DAM DETAIL

NOT TO SCALE



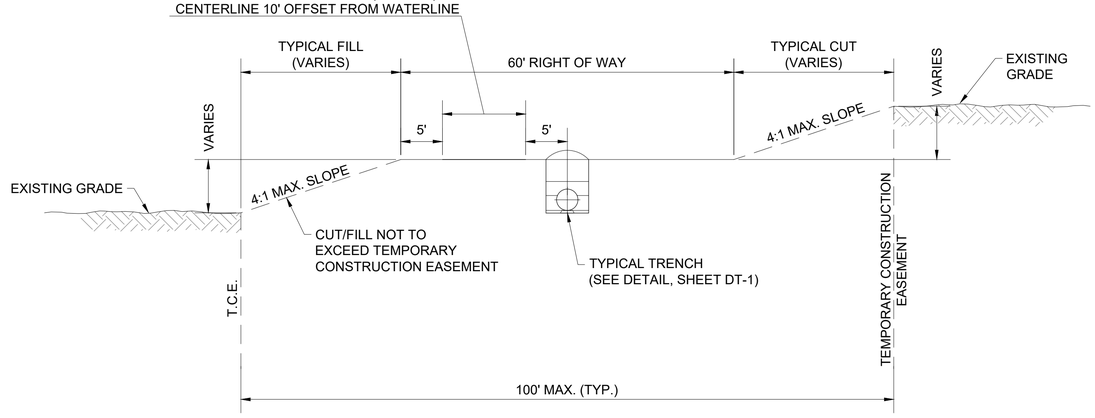
TYPICAL FIBER ROLL INSTALLATION

NOT TO SCALE



ENTRENCHMENT DETAIL

NOT TO SCALE



TYPICAL PIPELINE ROW FINISHED GRADING DETAIL

NOT TO SCALE

NOTES:

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

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NEW MEXICO

CUTTER LATERAL - REACH 21
WATER PIPELINE

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A Robertson
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ADMIN APPROVAL - TITLE

FARMINGTON, NM 2017-12-07

REACH 21 PIPELINE

EROSION CONTROL
DETAILS (2 of 2)
AND R-O-W GRADING

SHEET DT-20

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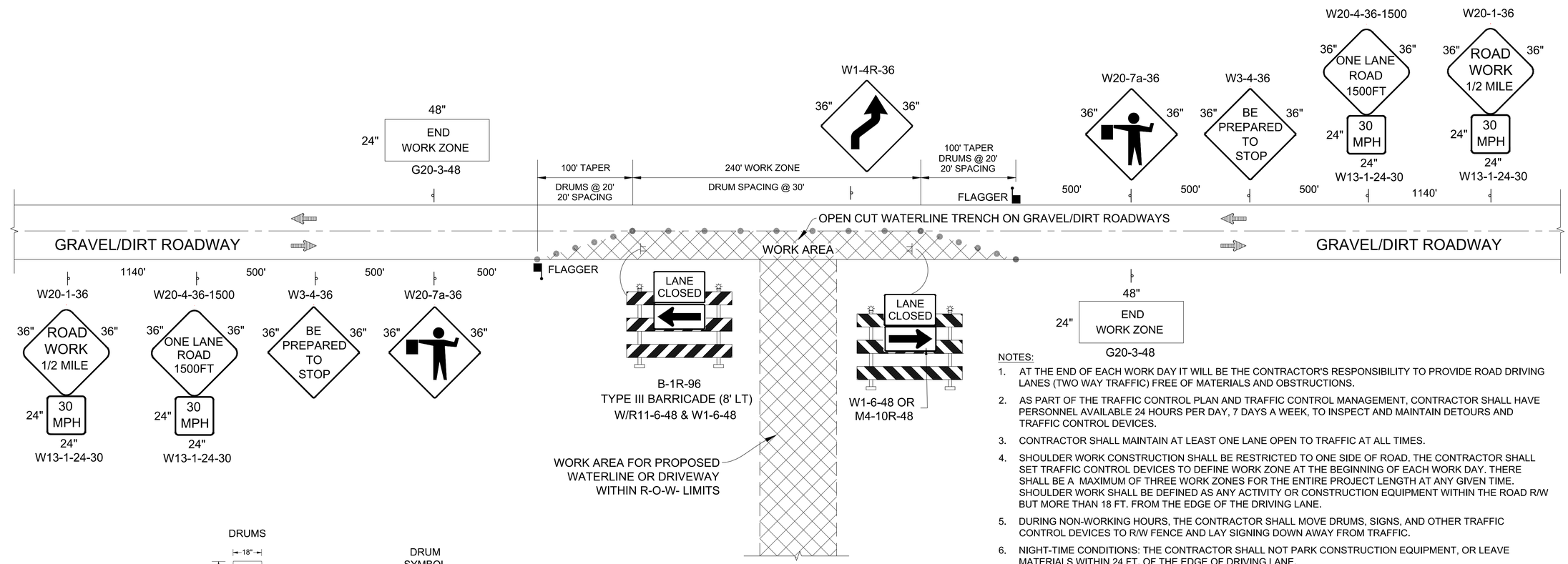
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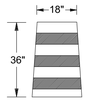
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ALL SIGNS ARE BLACK ON ORANGE
UNLESS OTHERWISE SPECIFIED

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.



DRUMS



DRUM SYMBOL



ALL DRUMS SHALL COMPLY WITH THE SPECIFICATIONS OF SECTION 702-TRAFFIC CONTROL DEVICES FOR CONSTRUCTION, NMSHTD STANDARD SPECIFICATIONS FOR HIGHWAY AND BRIDGE CONSTRUCTION, CURRENT EDITION

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

NOT TO SCALE

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

NMDOT CHANNELIZATION DEVICES, TYPE: DRUM, NO. 702525.
TOTAL OF 19 DRUMS REQUIRED.

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 R/W 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. FOLLOW ALL ROAD CROSSING PERMITS FOR GRAVEL/DIRT ROADS.

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WATER PIPELINE

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REACH 21 PIPELINE

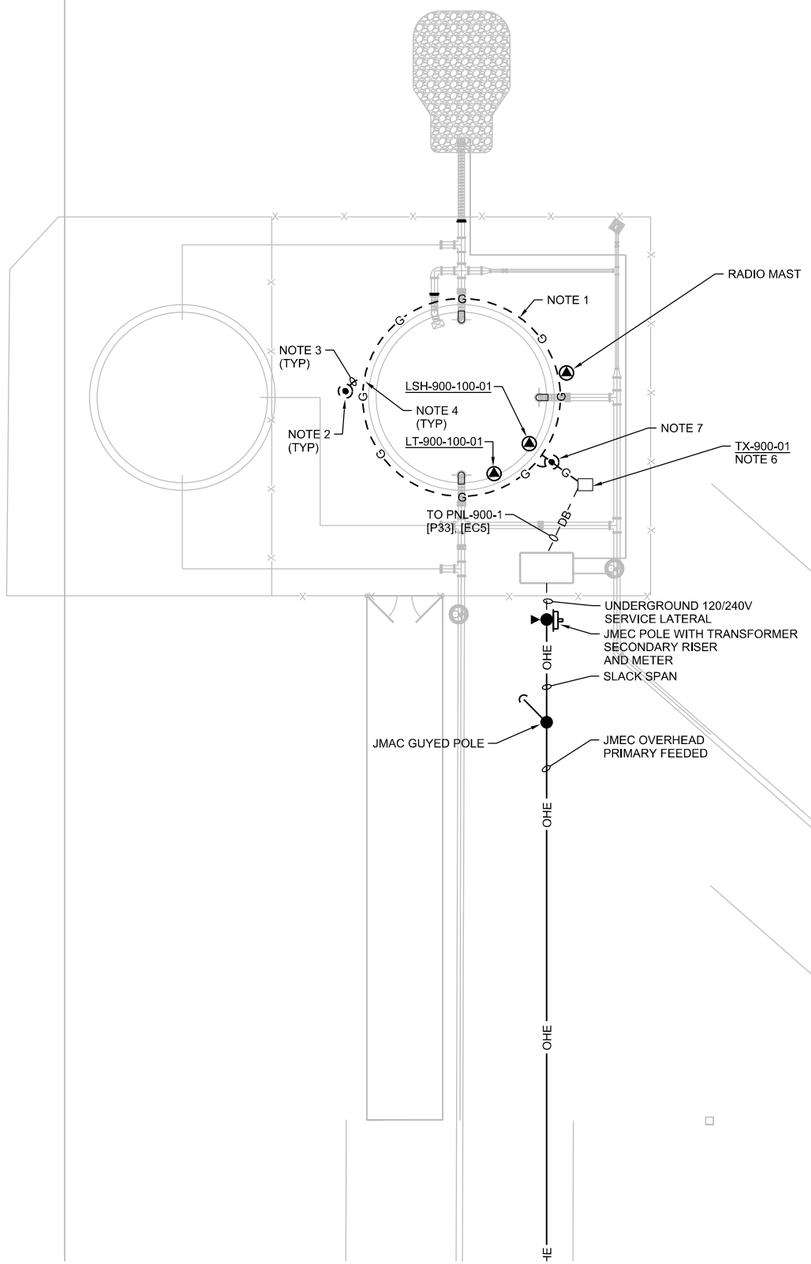
TRAFFIC CONTROL
(GRAVEL AND DIRT ROAD)

SHEET DT-21

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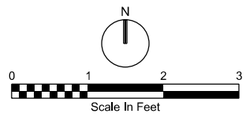
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CAD FILENAME
Reach 21 Traffic Control.dwg



NOTES:

1. TANK SITE GROUNDING ELECTRODE SYSTEM: 4/0 AWG BARE COPPER WIRE EMBEDDED IN LOWER 1/3 OR TANK FOUNDATION. INSTALL WITH MINIMUM 3 INCHES OF CONCRETE COVER.
2. GROUND CONNECTION PLATE: NEMA 4-HOLE, WITH COMPRESSION CONNECTION SUITABLE FOR 4/0 AWG WIRE. BURNDY YGF OR APPROVED EQUAL. INSTALL ON THE VERTICAL FACE OF THE FOUNDATION, 6 INCHES BELOW TOC.
3. PIGTAIL: 4/0 AWG BARE COPPER WIRE.
4. EXTHERMIC CONNECTION.
5. N O T U S E D .
6. N O T U S E D .
7. DIRECT-BURIED 400 AWG COPPER WIRE FROM TRANSFORMER SECONDARY GROUND TERMINAL TO GROUND CONNECTION PLATE AT TANK. CONNECT TO GROUND CONNECTION PLATE AT THE TANK WITH NEMA 2-HOLE LUG, (BURNDY YGHA OR APPROVED EQUAL) AND IRREVERSABLE HARDWARE.



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VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

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NEW MEXICO

CUTTER LATERAL - REACH 21
WATER TREATMENT PLANT

NO.	DATE	REVISION	BY	APVD

J LANDMAN
DESIGNED
E ARMIJO
DRAWN
M MACROSTIE
CHECKED
J LANDMAN
TECH. APPR.
APPROVED
ADMIN APPROVAL -

FARMINGTON, NM DECEMBER 2017

TANK 3 SUPPORT FACILITY

ELECTRICAL
PLAN

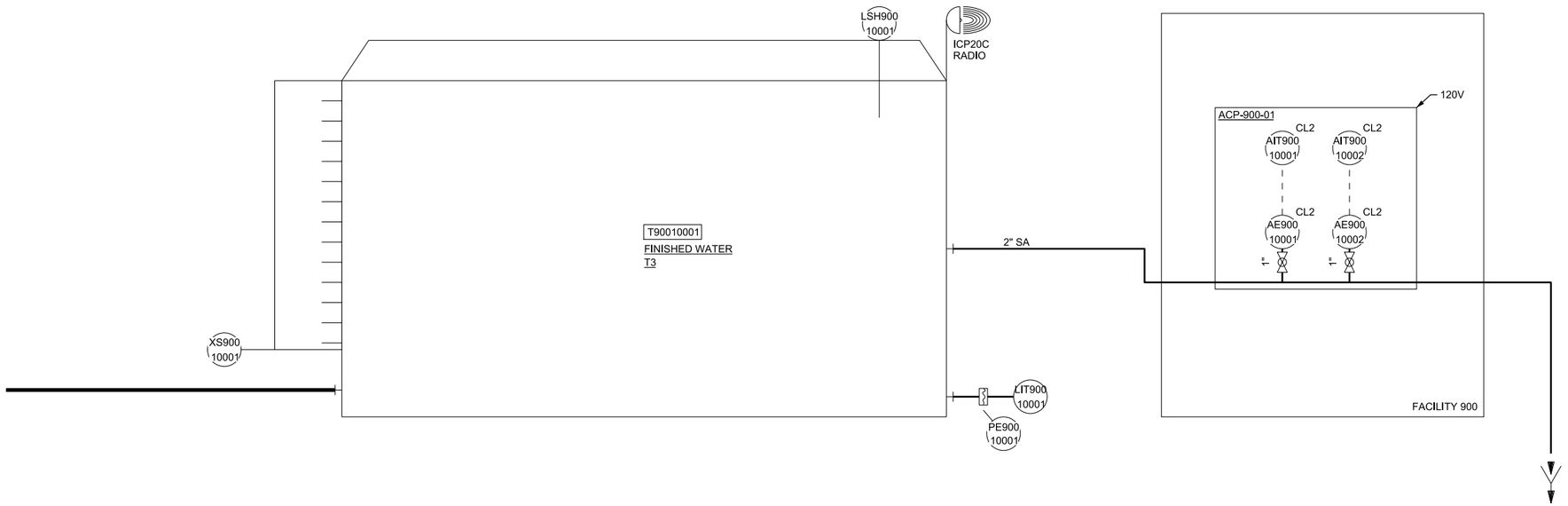
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DATE PLOTTED
2017\11\16
TIME PLOTTED
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VERIFY SCALE

BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

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CUTTER LATERAL - REACH 21
WATER TREATMENT PLANT

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FARMINGTON, NM DECEMBER 2017

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I&C

FACILITY 900
FINISH WATER

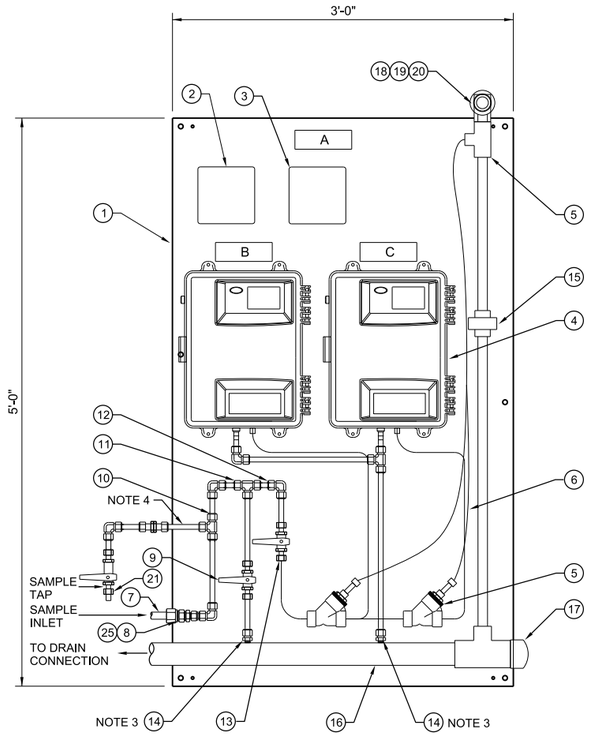
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12/1/2017
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TYPICAL ANALYZER PANEL CL2 - COLORMETRIC

GENERAL NOTES

1. ONLY THE BACK PANEL IS REQUIRED. ENCLOSURE, HEATER AND A/C UNIT ARE NOT REQUIRED.
2. OPENING AT BACK OF PANEL FOR PIPE PENETRATION SEAL WATER TIGHT.
3. DRILL AND TAP CONNECTION.
4. PROVIDE OPENING INSIDE OF PANEL FOR SAMPLE PIPING. FABRICATE SAMPLE TAP AND REMOVE AT TEE FOR SHIPMENT TO PROJECT SITE.

BILL OF MATERIALS

Item	Qty	Description	Manufacturer	Part Number	Notes
1	1	Enclosure Back Panel 60" x 36"	Hoffman	A60P36F1	
2	1	120 VAC Terminal Junction Box	Hoffman		
3	1	24 VDC Terminal Junction Box	Hoffman		
4	2	Chlorine Analyzer	HACH	5440001	Supplied by CH2M Hill
5	2	Sample Conditioning Unit	HACH	Included with Chlorine Analyzer	Supplied by CH2M Hill
6	As Req	1/4" OD Flexible Tubing	HACH	Included with Chlorine Analyzer	
7	As Req	3/4" PVC Pipe			
8	1	3/4" x 1/2" Reducing Union	Swagelok	SS-1210-6-8	
9	3	1/2" 40 Series Ball Valve, SST	Swagelok	SS-45S8	
10	As Req	1/2" Tubing, 316 SST	Swagelok	SS-T8-S065-20	
11	3	1/2" Compression x 1/2" Compression 90-DEG Elbow	Swagelok	SS-810-9	
12	2	1/2" Compression x 1/2" Compression x 1/2" Compression Tee	Spears	SS-810-3	
13	1	1/2" x 1/4" Tube Fitting, Bulkhead Reducing	Swagelok	SS-810-61-4	
14	2	1/2" Male Fitting x 1/2" MNPT	Swagelok	SS-810-1-8BT	
15	1	1" (Soc) x 1" MNPT Adapter	Spears		
16	As Req	2" PVC Pipe (Drain) Sch 80	Spears		
17	1	2" Cap	Spears		
18	1	1" Female NPT x 1" Male NPT 90 Deg Elbow	Swagelok	SS-16-SE	
19	1	1" Female Tube Connector x 1" Female NPT	Swagelok	SS-1610-7-16	
20	1	1" x 3/4" Reducing Union	Swagelok	SS-1610-6-8	
21	1	1/2" Compression x 1/2 Female NPT Connector (Sample Tap)	Swagelok	SS-810-7-8	
22	1	3/4" Tank Adapter (Inlet) Sch 80 PVC	Spears		
23	1	2" Tank Adapter (Outlet) Sch 80 PVC	Spears		
24	1	PVC Bulkhead Fitting 1"	Hayward	BFA1010TEL	
25	1	Female Tube Adapter, 3/4 in. Tube OD x 3/4 in. Female NPT	Swagelok	SS-12-TA-7-12	
26	As Req	Flexible Non-Metallic Liquid Tight Conduit			

NAMEPLATE SCHEDULE

Item	Line 1	Line 2	Line 3	Nameplate Size	Letter Size
A	ACP-900-100-01	TANK T3	CHLORINE ANALYZER PANEL	6" x 2"	5/16"

RECLAMATION
Managing Water in the West

ch2m

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

ALWAYS THINK SAFETY

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
NAVAJO-GALLUP WATER SUPPLY PROJECT
NEW MEXICO

CUTTER LATERAL - REACH 21
WATER TREATMENT PLANT

Preliminary Draft
For Review Only
Not For Construction

NO.	DATE	REVISION	BY	APVD

D THOMAS
DESIGNED
S FLASKA
DRAWN
A ELLIS
CHECKED
J LANDMAN
TECH. APPR.
APPROVED
ADMIN APPROVAL -

FARMINGTON, NM DECEMBER 2017

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I&C

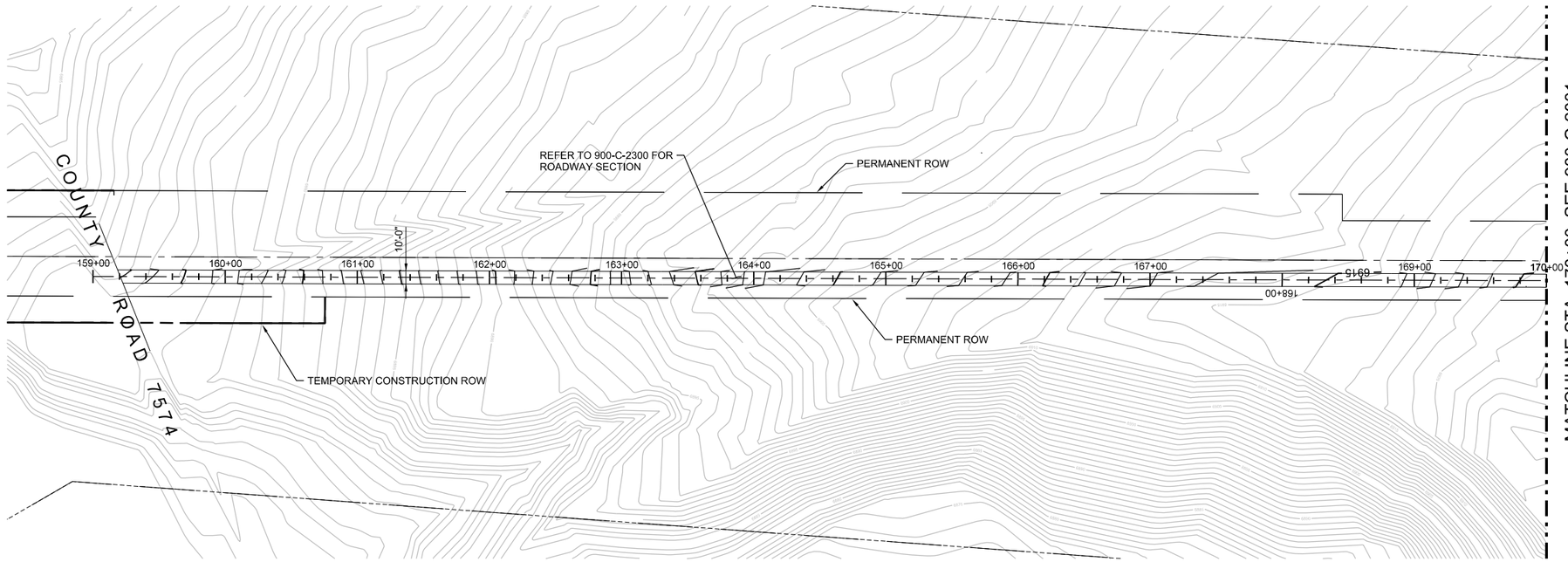
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CL2

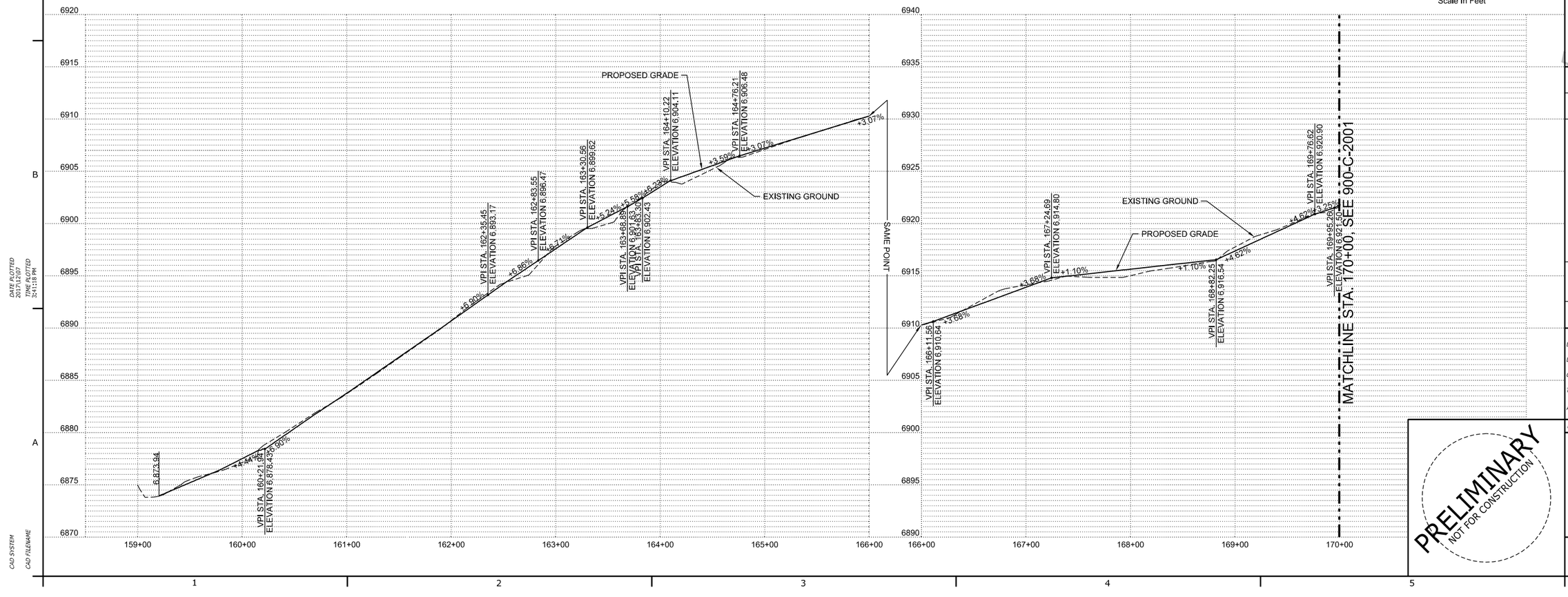
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NEW MEXICO

CUTTER LATERAL - REACH 21
WATER TREATMENT PLANT

Not For Construction
DRAFT
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NO.	DATE	REVISION	BY	APVD

J HONEA
DESIGNED
E ARMIJO
DRAWN
D PETERSON
CHECKED
J HONEA
TECH. APPR.
APPROVED
ADMIN APPROVAL -

FARMINGTON, NM DECEMBER 2017

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TANK 3 ACCESS ROAD

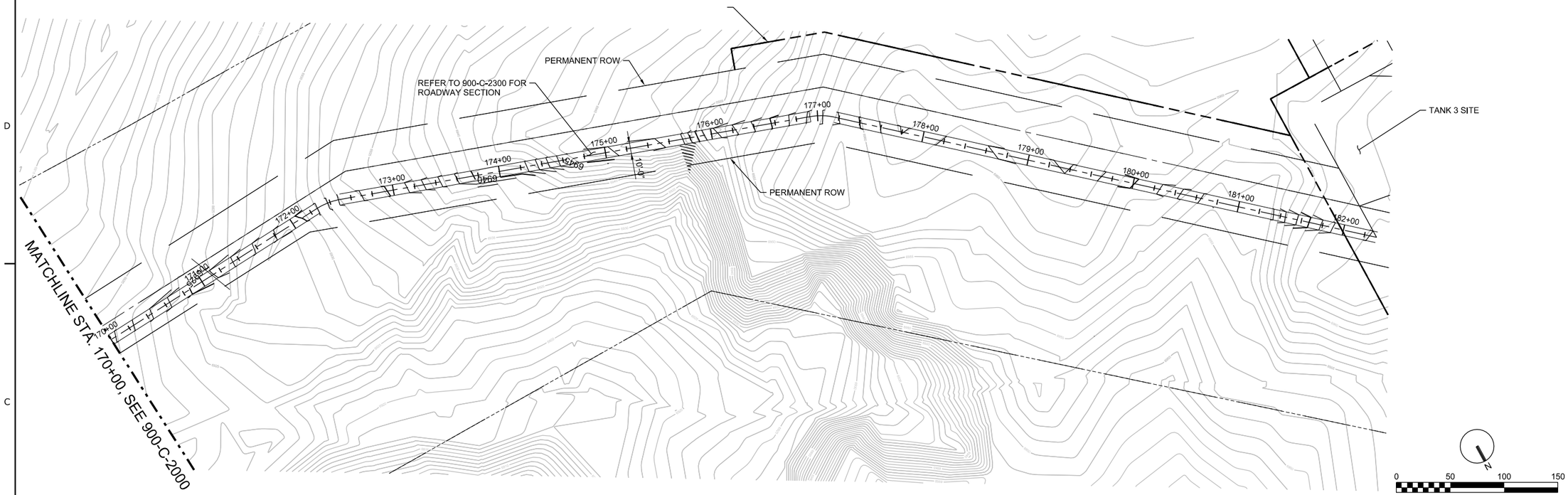
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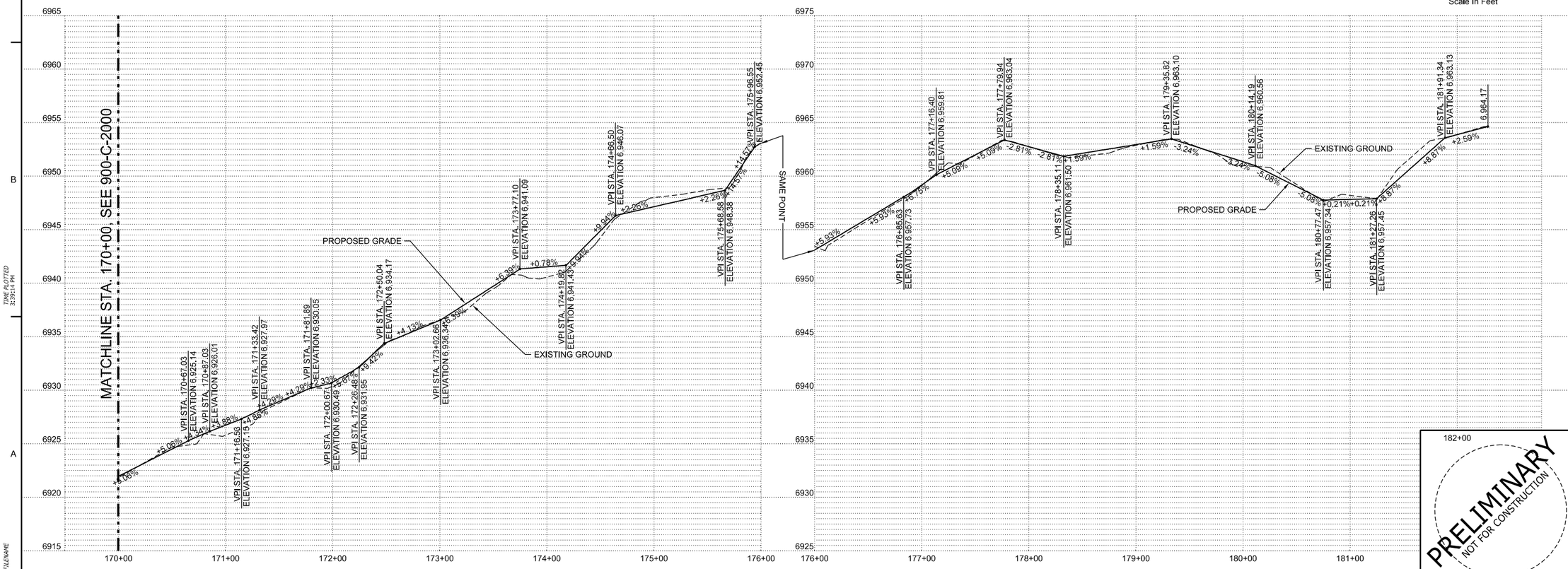
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NAVAJO-GALLUP WATER SUPPLY PROJECT
NEW MEXICO

CUTTER LATERAL - REACH 21
WATER TREATMENT PLANT

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DRAWN
D PETERSON
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J HONEA
TECH. APPR.
APPROVED
ADMIN APPROVAL -

FARMINGTON, NM DECEMBER 2017

TANK 3 ACCESS ROAD

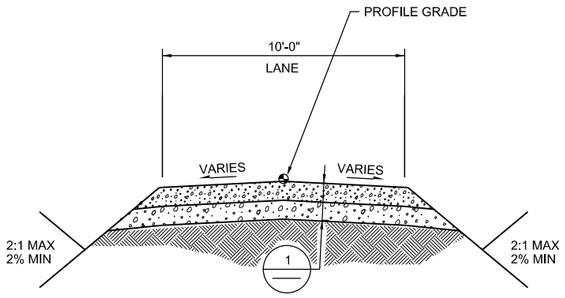
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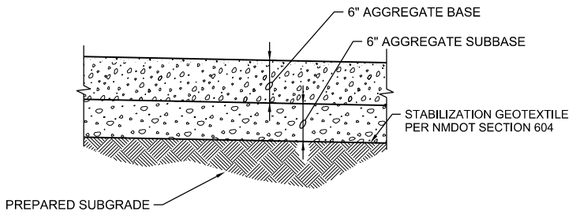
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ONE WAY GRAVEL SITE ROAD

NTS
TANK 3 ACCESS ROAD



1 LIGHT DUTY GRAVEL SECTION

NTS

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BUREAU OF RECLAMATION"
NAVAJO-GALLUP WATER SUPPLY PROJECT
NEW MEXICO

CUTTER LATERAL - REACH 21

WATER TREATMENT PLANT

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DESIGNED
E ARMIJO
DRAWN
D PETERSON
CHECKED
J HONEA
TECH. APPR.
APPROVED
ADMIN APPROVAL -

FARMINGTON, NM DECEMBER 2017

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TANK 3 ACCESS ROAD

DETAILS

900-C-2300

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