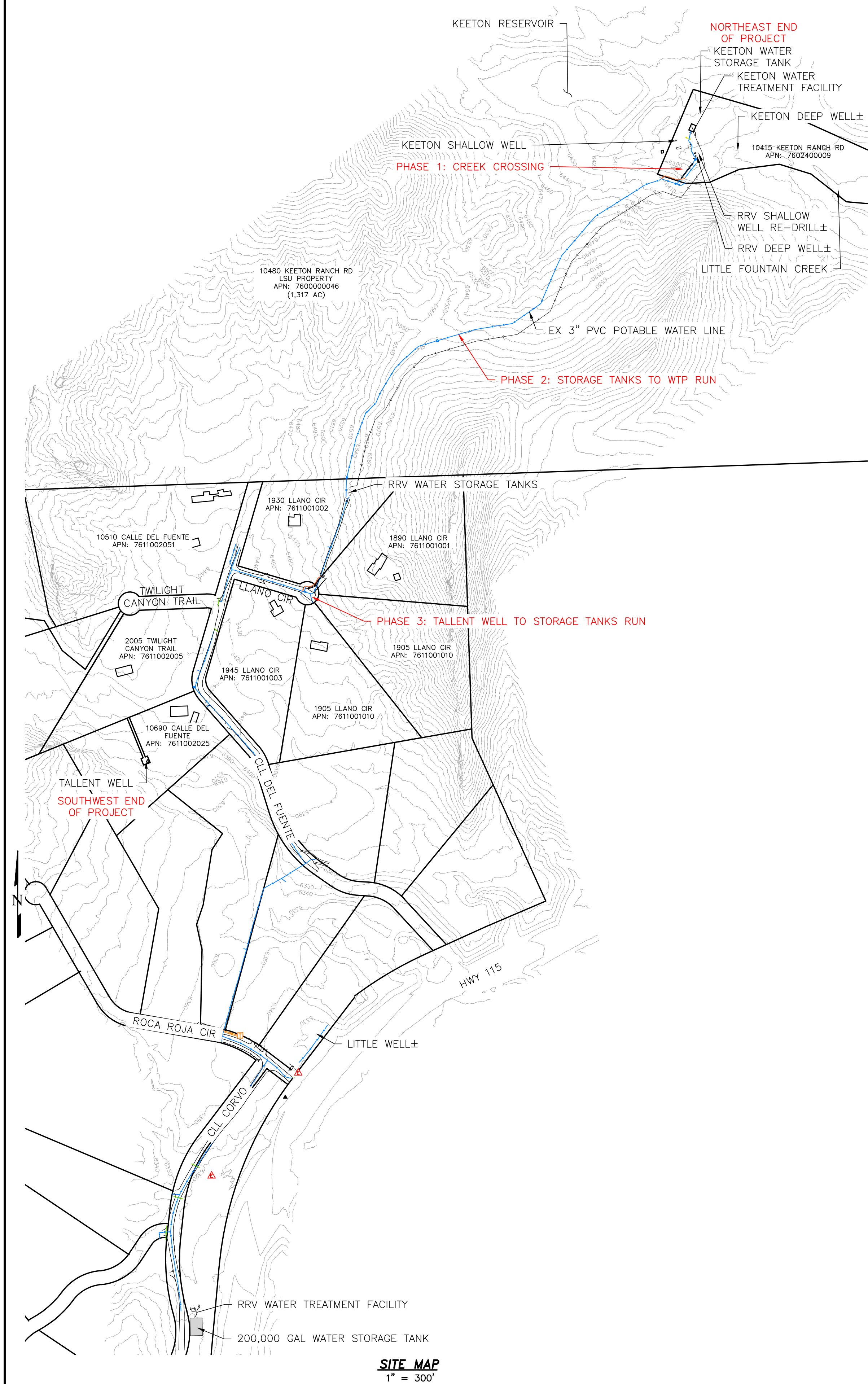


RED ROCK VALLEY ESTATES WATER DISTRICT

RAW/POTABLE WATER TRANSMISSION LINES PLANS

COLORADO SPRINGS

NOVEMBER 2024



SITE MAP
1" = 300'

GENERAL WATER PLAN NOTES

- THE PREPARATION OF THESE PLANS WAS RUSHED AT THE DIRECTION OF THE CLIENT. DUE TO THIS THE EXISTING CONDITIONS INFORMATION INCLUDED AND LEVEL OF DETAIL IN THE DESIGN IS LESS THAN IT OTHERWISE WOULD BE.
- WATER PIPE INSTALLATION SHALL FOLLOW THE COLORADO SPRINGS UTILITIES WATER LESS STANDARDS. THERE WILL BE NOTED DEVIATIONS FROM THESE STANDARDS.
- CONTOUR DATA FROM LIDAR, DATASET: 2018 3DEP EAST CO EL PASO, COLLECTED IN 2018, COORDINATE SYSTEM STATE PLANE 1983 (NAD83), 2' CONTOUR INTERVALS, SOME SURVEYED SPOT ELEVATION DATA ALONG THE ALIGNMENTS.
- THE LOCATIONS OF THE EXISTING WATER LINES ARE APPROXIMATE, AND ARE INSUFFICIENT TO PREPARE A DETAILED HORIZONTAL DESIGN OF THE PROPOSED WATER LINES PARALLELING THE EXISTING PIPING. THE HORIZONTAL PIPE DESIGNS ARE APPROXIMATE AND SOME FIELD FITTING IS EXPECTED.
- GROUND SURFACE ELEVATION DATA ALONG THE ALIGNMENTS IS INSUFFICIENT TO PREPARE A DETAILED VERTICAL DESIGN OF THE PROPOSED WATER LINES. THE VERTICAL PIPE DESIGNS ARE APPROXIMATE AND SOME FIELD FITTING IS EXPECTED.
- THE CONTRACTOR SHALL OBTAIN UTILITY LOCATES PRIOR TO ANY EXCAVATION.
- THE ACCURACY OF LOCATIONS OF EXISTING PIPELINES, HYDRANTS, VALVES AND SERVICE LINES ARE NOT GUARANTEED. IF FIELD CONDITIONS ARE FOUND TO BE DIFFERENT THAN SHOWN ON THE PLANS, THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF RECORD IMMEDIATELY.
- ALL PROPOSED WATER LINES SHALL HAVE A MINIMUM COVER OF 5' UNLESS OTHERWISE NOTED.
- MECHANICAL JOINT RESTRAINTS ARE REQUIRED AT ALL BENDS, TEES, AND VALVES 3" DIAMETER AND GREATER.
- ALL PROPOSED VALVES ARE GATE VALVES.
- NO TREES OR STRUCTURES ARE PERMITTED WITHIN FIFTEEN FEET (15') OF A WATER MAIN.
- THE CONTRACTOR IS RESPONSIBLE FOR ANY DAMAGE TO ANY UTILITY FACILITIES AS A RESULT OF HIS ACTIONS. THE CONTRACTOR SHALL MAKE ALL THE REQUIRED REPAIRS IMMEDIATELY.
- ALL BENDS SHALL BE FIELD STAKED PRIOR TO CONSTRUCTION AND THE STATIONING ON THE FIELD STAKES SHALL MATCH THE STATIONING ON THE PLANS.
- ALL TRENCH BACKFILL AND COMPACTION SHALL BE IN ACCORDANCE WITH SECTION 206 OF THE CITY OF COLORADO SPRINGS STANDARD SPECIFICATIONS MANUAL.
- HDPE PIPE MAY BE COLD FIELD BENT WITHOUT AFFECTING THE WORKING PRESSURE RATING OF THE PIPE. THE MINIMUM COLD BEND RADIUS FOR DR9 HDPE PIPE INSTALLED IN AN OPEN CUT TRENCH IS 20 TIMES THE PIPE OD. WHEN A FITTING OR FLANGE IS PRESENT OR IS TO BE INSTALLED NEAR OR IN THE RADIUS THEN THE MINIMUM RADIUS IS 100 TIMES THE PIPE OD FOR A DISTANCE OF 5 TIMES THE PIPE DIAMETER ON EITHER SIDE OF THE FITTING LOCATIONS.
 - FOR 3" HDPE PIPES IN OPEN TRENCH THE MINIMUM ALLOWABLE BEND RADIUS SHALL BE 6.0'.
 - FOR 3" HDPE PIPES WITHIN 1.5' OF FITTINGS OR FLANGES THE MINIMUM ALLOWABLE BEND RADIUS SHALL BE 30.0'.
 - FOR 4" HDPE PIPES IN OPEN TRENCH THE MINIMUM ALLOWABLE BEND RADIUS SHALL BE 7.5'.
 - FOR 4" HDPE PIPES WITHIN 2.0' OF FITTINGS OR FLANGES THE MINIMUM ALLOWABLE BEND RADIUS SHALL BE 40.0'.
- PARALLELING THE EXISTING PIPES: MOST OF THE BENDS IN THE EXISTING PIPING WILL BE LOOSELY FOLLOWED BY CURVING THE PROPOSED HDPE PIPES. BEND FITTINGS ARE ONLY EXPECTED TO BE USED ON THE PROPOSED HDPE PIPES WHEN CURVING THE PIPE IS INSUFFICIENT.
- RAW WATER LINES SHOULD BE PASSED UNDER POTABLE WATER LINES AT ANY CROSSINGS.
- TRACER WIRE AND MARKING TAPE SHALL BE INSTALLED WITH ALL NEW WATER LINES. FOLLOW CSU STANDARDS FOR BOTH MATERIALS.
- MAX WORKING PRESSURE FOR THE PROPOSED HDPE PIPING IS 200 PSI.
- FOR HDPE PIPING: CRA WITH A WALL ANCHOR ON THE HDPE LINE IS REQUIRED AT ALL TRANSITIONS TO PVC AND DIP SLIP JOINT PIPE AND ON THE UPSTREAM SIDE OF ALL IN-LINE VALVES.
- FOR HDPE PIPING SLOPED OVER 10%: A CRA WITH A WALL ANCHOR FITTING IS REQUIRED WITHIN 10' OF THE TOP AND BOTTOM OF THE SLOPE.
- FOR HDPE PIPING: A TRANSITION TO PVC OR DIP PIPE IS REQUIRED A MINIMUM OF 10' PRIOR TO ENTERING ANY VAULT. PIPING AND FITTINGS INSIDE VAULTS SHALL NOT BE HDPE.
- GALVANIC ANODES WITH HDPE INSTALLATIONS: ALL METALLIC FITTINGS AND APPURTENANCES (VALVES, BENDS, TEES, ETC) SHALL BE INSTALLED WITH ONE HIGH POTENTIAL MAGNESIUM ANODE BONDED TO THE METAL. WHERE FITTINGS ARE ELECTRICALLY CONTINUOUS, A MINIMUM OF ONE ANODE MAY BE INSTALLED TO PROTECT ALL THE FITTINGS. ANODE SIZES SHALL BE A MINIMUM OF 9 POUNDS FOR INDIVIDUAL FITTINGS AND 17 POUNDS FOR BONDED FITTINGS.
- SEE CSU WATER LESS SECTION 6.6 FOR HDPE CONSTRUCTION STANDARDS. ONE DEVIATION FROM THE STANDARDS IS THAT THE INSPECTIONS WILL BE PERFORMED BY SOMEONE OTHER THAN CSU.
- DISINFECTION OF ALL NEW WATER LINES FOLLOWING INSTALLATION IS THE RESPONSIBILITY OF THE CONTRACTOR. RRWD MUST APPROVE THE DISINFECTION PROCEDURE PRIOR TO DISINFECTION AND ACCEPT THE DISINFECTION FOR IT TO BE CONSIDERED COMPLETED. THE MINIMUM CONTACT TIME FOR DISINFECTION IS 48 HOURS.
- WHICH SIDE OF THE EXISTING WATER LINE THE NEW WATER LINES WILL BE INSTALLED ON HAS NOT YET BEEN DETERMINED, AND WILL BE BASED ON FIELD CONDITIONS. IF THE NEW WATER LINES CROSS THE EXISTING LINES MINIMUM VERTICAL CLEARANCES MUST BE MAINTAINED (1.5').
- THERE IS A SET OF AS-BUILT PLANS FOR THE KEETON WATER TREATMENT PLANS THAT SHOW THE UTILITIES IN THAT AREA. THE UNDERGROUND UTILITIES LOCATIONS ARE NOTED AS APPROXIMATE, BUT IT'S THE BEST INFO CURRENTLY AVAILABLE ON THEM.
- PER THE COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT, STATE OF COLORADO DESIGN CRITERIA FOR POTABLE WATER SYSTEMS DESIGN CRITERIA FOR POTABLE WATER SYSTEMS "THE DEPARTMENT'S CURRENT POLICY IS TO REVIEW NEW AND SUBSTANTIAL MODIFICATIONS TO SOURCES, TREATMENT, AND PROTECTED WATER STORAGE." AS THIS IS A PROJECT TO ADD NEW WATER TRANSMISSION LINES, STATE REVIEW/APPROVAL OF THIS PROJECT IS NOT REQUIRED.
- CONSTRUCTION INSPECTIONS WILL BE PERFORMED BY RED ROCK VALLEY WATER DISTRICT AND TERRA NOVA ENGINEERING PERSONNEL.
- FOLLOWING PIPE INSTALLATION, CONTRACTOR SHALL INSTALL PERMANENT SIGNAGE ALONG THE UTILITY ALIGNMENT MARKING KEY LOCATIONS (CREEK CROSSING, PIPE LEAVES ROAD, ETC.).

CONTRACTOR RAPID REPAIR CAPABILITY REQUIRED

- THE CONTRACTOR SHALL HAVE THE MEANS AND MATERIALS AVAILABLE ONSITE TO RAPIDLY REPAIR ANY DAMAGE TO THE EXISTING WATER TRANSMISSION LINES ON THE SITE. THE PURPOSE OF THIS IS TO AVOID A WATER OUTAGE DUE TO DAMAGED LINES. THE TIME LIMIT FOR A RAPID REPAIR IS 1 HOUR.
- EXISTING 2", 3", AND 4" PVC TRANSMISSION LINES ARE EXPECTED AT THE SITE. OTHER PIPE SIZES AND MATERIALS MAY ALSO BE ENCOUNTERED. THE EXISTING TRANSMISSION LINES WILL BE IN OPERATION DURING CONSTRUCTION.
- PERMANENT REPAIR OF ANY DAMAGED UTILITIES WILL ALSO BE REQUIRED, REGARDLESS OF ANY RAPID REPAIRS MADE.

POTABLE WATER BYPASS ROUTE REQUIRED DURING CONSTRUCTION

- PRIOR TO THE START OF ANY EXCAVATION ACTIVITIES BETWEEN THE WTP AND STORAGE TANKS, THE CONTRACTOR SHALL PROVIDE A POTABLE WATER BYPASS ROUTE FROM THE WATER TREATMENT PLANT TO THE STORAGE TANKS. THE PURPOSE OF THIS IS TO PROVIDE AN ALTERNATIVE ROUTE FOR WATER TO BE SUPPLIED TO THE STORAGE TANKS WHILE THE EXISTING LINE IS TAKEN OFFLINE OR IN THE EVENT THE EXISTING LINE IS DAMAGED DURING CONSTRUCTION.
- THIS ROUTE SHALL BE PRIMARILY ABOVEGROUND, WITH ROAD CROSSINGS BEING BURIED OR THE PIPE RAMPED OVER, AND LOCATED A MINIMUM OF 50' FROM CONSTRUCTION ACTIVITIES.
- THE MINIMUM PIPE OR HOSE SIZE SHALL BE 3", AND GREATER IF REQUIRED TO SUPPLY SUFFICIENT WATER TO THE TANKS. MINIMUM PRESSURE RATING IS 150 PSI.
- THE BYPASS ROUTE SHALL BE TESTED TO DEMONSTRATE IT CAN SUPPLY WATER TO THE STORAGE TANKS BEFORE THE START OF EXCAVATION ACTIVITIES. ONCE TESTING IS COMPLETE THE PIPING OR HOSE INTERIOR WILL BE DISINFECTED AND ANY ROUTE OPENINGS SEALED TO PREVENT CONTAMINATION. IF THE PIPE OR HOSE INTERIOR IS EXPOSED TO CONTAMINATION IT SHALL BE RE-DISINFECTED.
- THIS BYPASS ROUTE WILL BE REMOVED FOLLOWING THE INSTALLATION OF THE PROPOSED PIPING.
- WHERE AND HOW THE BYPASS ROUTE WILL BE CONNECTED TO THE WTP WILL BE DETERMINED IN THE FIELD. THERE IS AN EXISTING 2" GALVANIZED PIPE ON THE STORAGE TANKS THAT CAN BE CONNECTED TO WITH A 2" FEMALE CAMLOCK OR MALE 2" THREADS. THE CONNECTIONS WILL BE MADE PER THE DIRECTION OF RRWD.

PROJECT PHASES

PROJECT PHASES HAVE BEEN INCLUDED DUE TO THE DIFFERENT SCOPES IN DIFFERENT AREAS OF THE SITE. THE PROJECT WAS DESIGNED AS A WHOLE AND ALL THREE PHASES CAN BE CONSTRUCTED SIMULTANEOUSLY.

PHASE 1: CREEK CROSSING - INSTALL STEEL CASING PIPES SET IN CONCRETE FOR UTILITY CROSSING UNDER CREEK

PHASE 2: STORAGE TANKS TO WTP RUN - 1 POTABLE WATER LINE AND 1 RAW WATER LINE IN A JOINT TRENCH WITH THE EXISTING POTABLE WATER LINE, CONNECTING TO THE EXISTING PIPING AT THE WATER TREATMENT PLANT AND STORAGE TANKS

PHASE 3: TALLENT WELL TO STORAGE TANKS RUN - 1 RAW WATER LINE IN A JOINT TRENCH WITH THE EXISTING POTABLE WATER LINE, CONNECTING TO THE EXISTING PIPING NEAR THE WELL

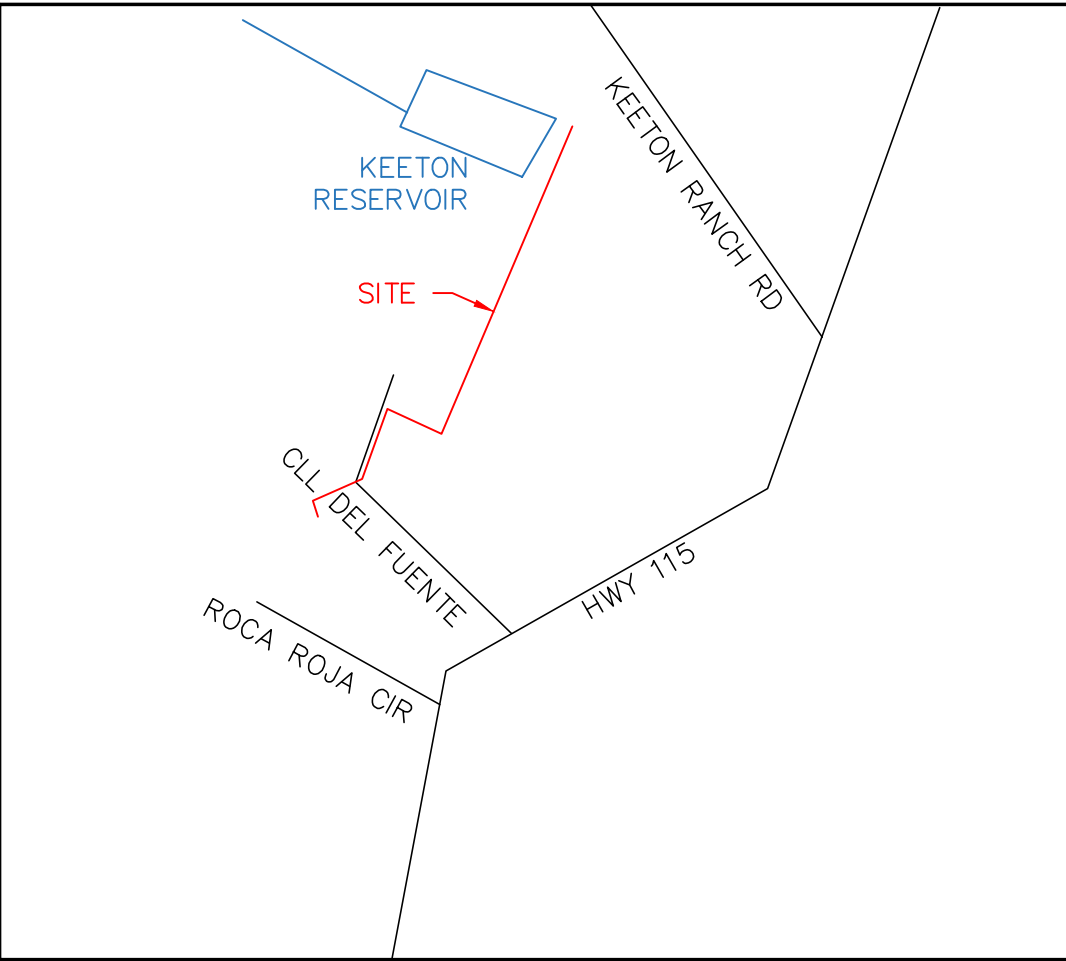
LIST OF DEVIATIONS FROM CSU STANDARDS

THIS LIST MAY NOT BE ALL INCLUSIVE. CONTACT THE DESIGN ENGINEER IF THERE IS A QUESTION ABOUT SOMETHING BEING A DEVIATION.

- THE CREEK CROSSING IS NOT DESIGNED TO CSU STANDARDS. SOME COMPONENTS OF THE DESIGN (SUCH AS CATHODIC PROTECTION) ARE PER CSU STANDARDS.
- FOR AIR/VAC VALVE STATION DETAIL HAS BEEN MODIFIED FROM CSU STANDARDS.
- THE PROPOSED PIPE SEPARATIONS.
- PLACING WATER TRANSMISSION LINES IN A JOINT TRENCH.
- THE USE OF 3" PIPE.
- CSU NOT APPROVING OR INSPECTING THE PLANS AND CONSTRUCTION.
- THE LARGE NUMBER OF UNKNOWN AND FIELD FITTING ON THESE PLANS.
- MINIMUM PACING BETWEEN PIPE FITTINGS.
- CSU MAXIMUM VALVE SPACING IS NOT BEING USED.

EROSION CONTROL NOTES

SEE THE SEPARATE GRADING AND EROSION CONTROL PLANS AND STORMWATER MANAGEMENT PLAN FOR THIS PROJECT.



VICINITY MAP
N.T.S.

SHEET INDEX

- COVER SHEET
- WATER OVERVIEW
- WATER PLAN - CREEK CROSSING PLAN AND PROFILE SHEET
- WATER PLAN - CREEK CROSSING DETAILS SHEET
- WATER PLAN - TANKS TO WTP RUN
- WATER PLAN - TANKS TO WTP RUN
- PROFILE - TANKS TO WTP RUN
- WATER PLAN - TALLENT WELL TO TANKS RUN
- PROFILE - TALLENT WELL TO TANKS RUN
- STANDARD DETAILS SHEET
- STANDARD DETAILS SHEET
- STANDARD DETAILS SHEET

CONTACTS

OWNER/DEVELOPER: RED ROCK VALLEY ESTATES WATER DISTRICT (RRWD)
15580 CALA ROJO DRIVE
COLORADO SPRINGS, CO 80926
STEVE SOVAIKO 719.359.6663
RRVWATER@GMAIL.COM

CIVIL ENGINEER: TERRA NOVA ENGINEERING
721 S. 23RD ST.
COLORADO SPRINGS, COLORADO 80904
DANE FRANK, PE 719.635.6422
DANE@TNSINC.COM

SURVEYOR: COMPASS SURVEYING & MAPPING
3253 WEST CAREFREE CIR
COLORADO SPRINGS, COLORADO 80917
MARK JOHANNES, PLS 719.3544120
MARK@CSAMLLC.COM

CONTRACTOR: TO BE DETERMINED

SITE ADDRESS

NE END OF SITE: KEETON WATER TREATMENT FACILITY, OFF KEETON RANCH ROAD
SOUTH END OF SITE: TALLENT WELL, OFF CLL DEL FUENTE
MAP SEARCH ADDRESS: CLL DEL FUENTE, COLORADO SPRINGS, COLORADO 80926

BENCH MARK

NATIONAL GEODETIC SURVEY, R 110 RESET, JK0288, NAD 83 AND NAVD 88, ELEV=6478.1 FT. IN THE TOP OF A SANDSTONE OUTCROP WITH A STANDARD DISK STAMPED R 110 1935.

APPROVALS

PREPARED UNDER MY DIRECT SUPERVISION FOR AND ON BEHALF OF TERRA NOVA ENGINEERING, INC.

DANE FRANK, COLORADO P.E. #50207

OWNER/DEVELOPER PLAN APPROVAL

I HAVE REVIEWED THESE PLANS AND AM FAMILIAR WITH THEIR CONTENTS.

SIGNED: OWNER/DEVELOPER

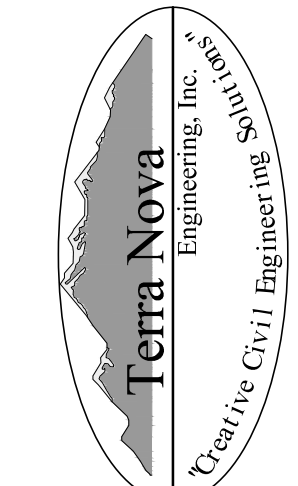
DATE:

OWNER/DEVELOPER (PRINT NAME)

REVISIONS	NO.	DESCRIPTION	DATE

UNTIL SUCH TIME AS THESE DRAWINGS ARE APPROVED BY THE REVIEWING AGENCIES, TERRA NOVA ENGINEERING, INC. APPROVES THEIR USE ONLY FOR THE PROJECT DESIGNATED BY WRITTEN AUTHORIZATION.

PREPARED FOR:
RRVE WATER DISTRICT
ATTN: STEVE SOVAIKO
15580 CALA ROJO DRIVE
COLORADO SPRINGS, CO 80926
719.359.6663



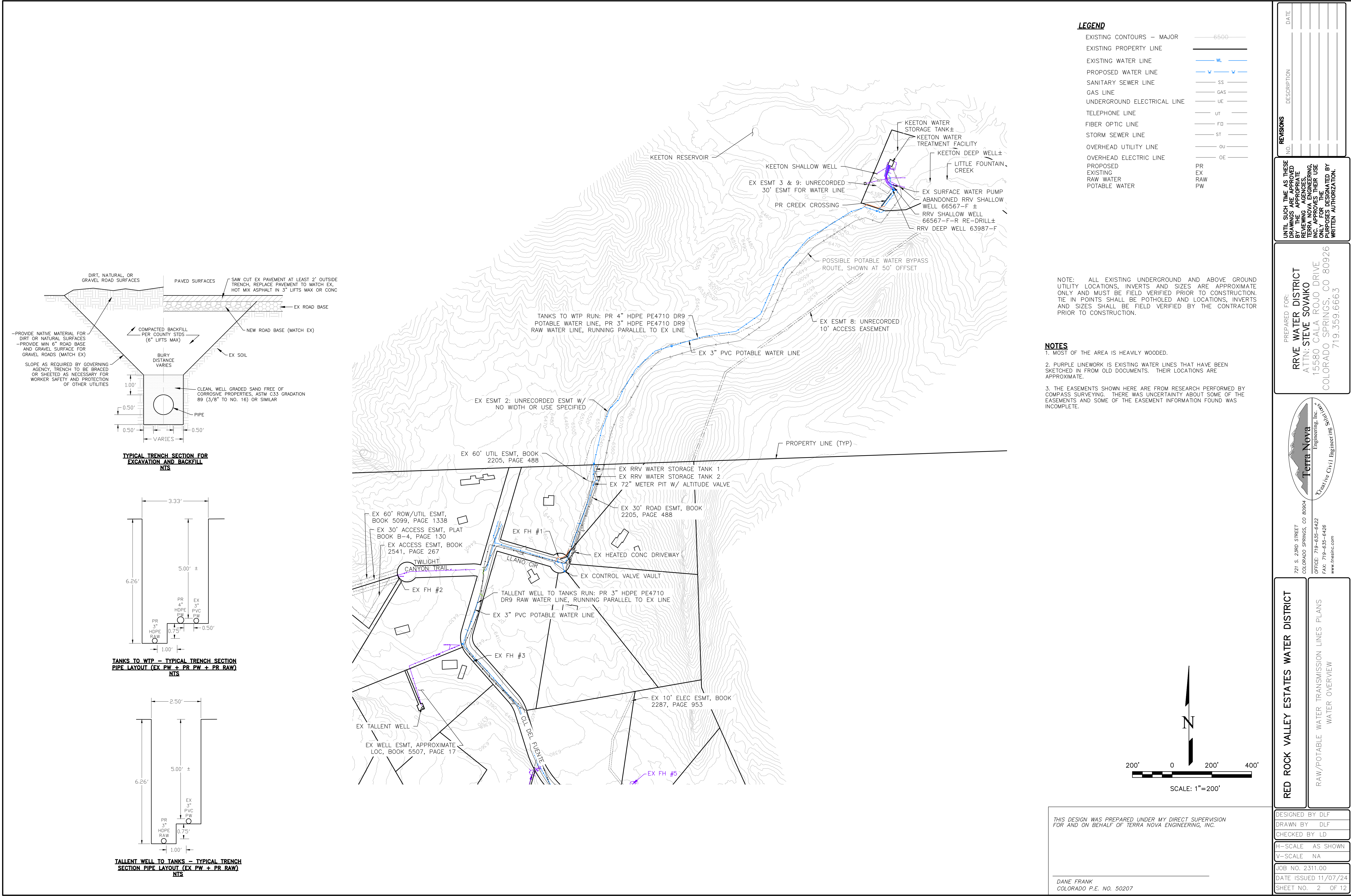
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OFFICE: 719-635-6422
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www.tnsinc.com

RED ROCK VALLEY ESTATES WATER DISTRICT

RAW/POTABLE WATER TRANSMISSION LINES PLANS

COVER SHEET

DESIGNED BY DLF
DRAWN BY DLF
CHECKED BY LD
H-SCALE NA
V-SCALE NA
JOB NO. 2311.00
DATE ISSUED 11/07/24
SHEET NO. 1 OF 12



LEGEND

EXISTING CONTOURS - MAJOR	6500
EXISTING PROPERTY LINE	
EXISTING WATER LINE	
PROPOSED WATER LINE	WL
SANITARY SEWER LINE	SS
GAS LINE	GAS
UNDERGROUND ELECTRICAL LINE	UE
TELEPHONE LINE	UT
FIBER OPTIC LINE	FO
STORM SEWER LINE	ST
OVERHEAD UTILITY LINE	OU
OVERHEAD ELECTRIC LINE	OE
PROPOSED EXISTING	PR
RAW WATER	RAW
POTABLE WATER	PW

NOTE: ALL EXISTING UNDERGROUND AND ABOVE GROUND UTILITY LOCATIONS, INVERTS AND SIZES ARE APPROXIMATE ONLY AND MUST BE FIELD VERIFIED PRIOR TO CONSTRUCTION. TIE IN POINTS SHALL BE POTHOLED AND LOCATIONS, INVERTS AND SIZES SHALL BE FIELD VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION.

NOTES

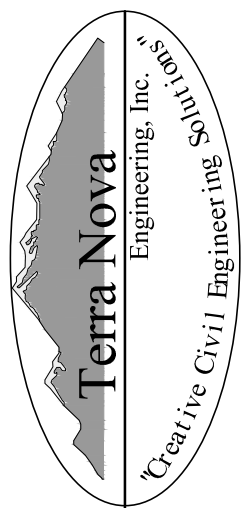
- MOST OF THE AREA IS HEAVILY WOODED.
- PURPLE LINEWORK IS EXISTING WATER LINES THAT HAVE BEEN SKETCHED IN FROM OLD DOCUMENTS. THEIR LOCATIONS ARE APPROXIMATE.
- THE EASEMENTS SHOWN HERE ARE FROM RESEARCH PERFORMED BY COMPASS SURVEYING. THERE WAS UNCERTAINTY ABOUT SOME OF THE EASEMENTS AND SOME OF THE EASEMENT INFORMATION FOUND WAS INCOMPLETE.

REVISIONS

NO.	DESCRIPTION	DATE

UNTIL SUCH TIME AS THESE DRAWINGS ARE APPROVED BY THE ENGINEERING, INC. APPROVES THEIR USE ONLY FOR THE PROJECT DESIGNATED BY WRITTEN AUTHORIZATION.

PREPARED FOR:
RRVE WATER DISTRICT
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Terra Nova

Engineering, Inc.

Creative Civil Engineer Inc

721 S. 2960 STREET
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RED ROCK VALLEY ESTATES WATER DISTRICT

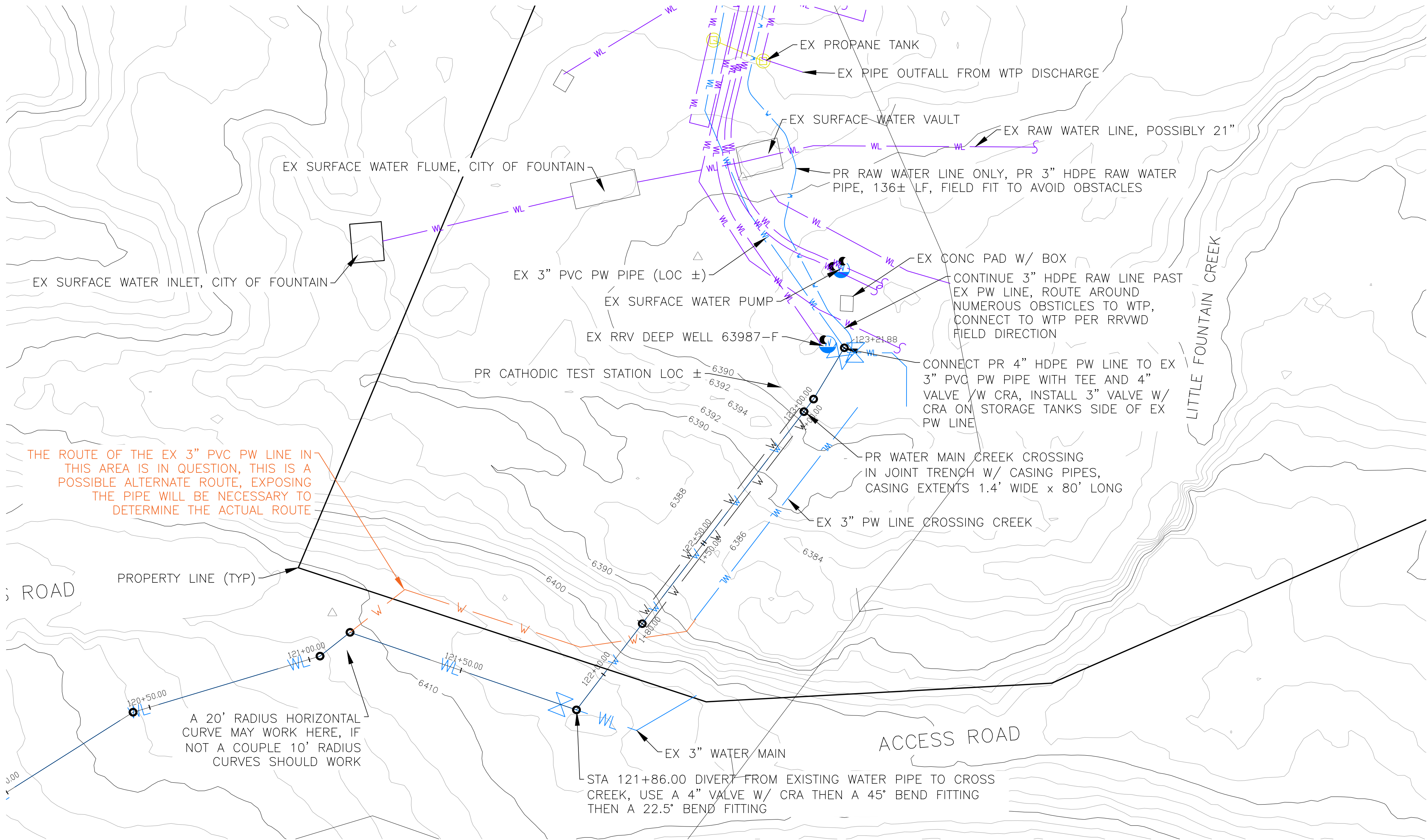
RAW/POTABLE WATER TRANSMISSION LINES PLANS
WATER OVERVIEW

DESIGNED BY DLF
DRAWN BY DLF
CHECKED BY LD
H-SCALE AS SHOWN
V-SCALE NA
JOB NO. 2311.00
DATE ISSUED 11/07/24
SHEET NO. 2 OF 12

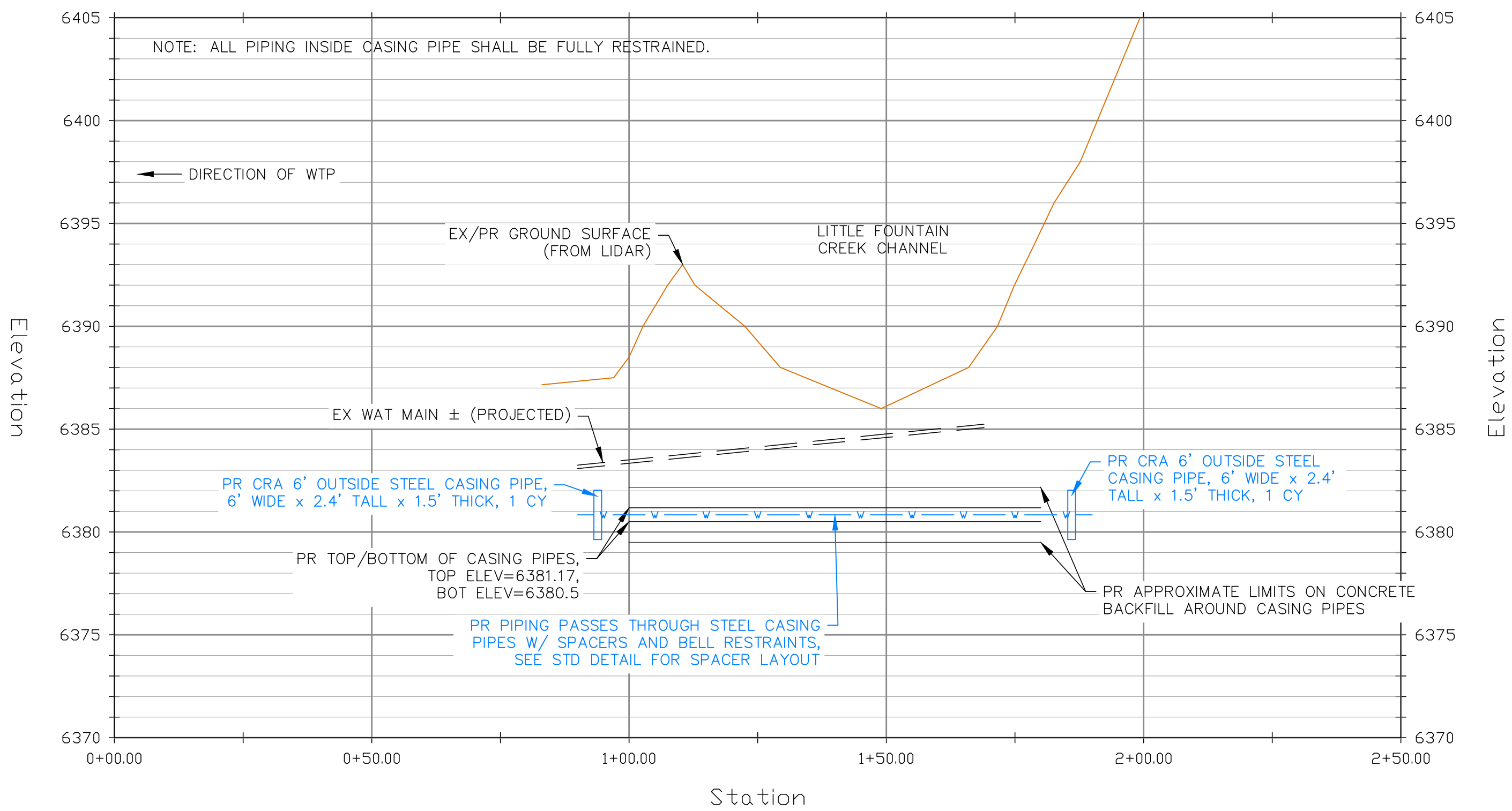
THIS DESIGN WAS PREPARED UNDER MY DIRECT SUPERVISION FOR AND ON BEHALF OF TERRA NOVA ENGINEERING, INC.

DANE FRANK
COLORADO P.E. NO. 50207

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CREEK CROSSING - PLAN & PROFILE VIEW
HORZ SCALE: 1"=20' - VERT SCALE: 1"=5'

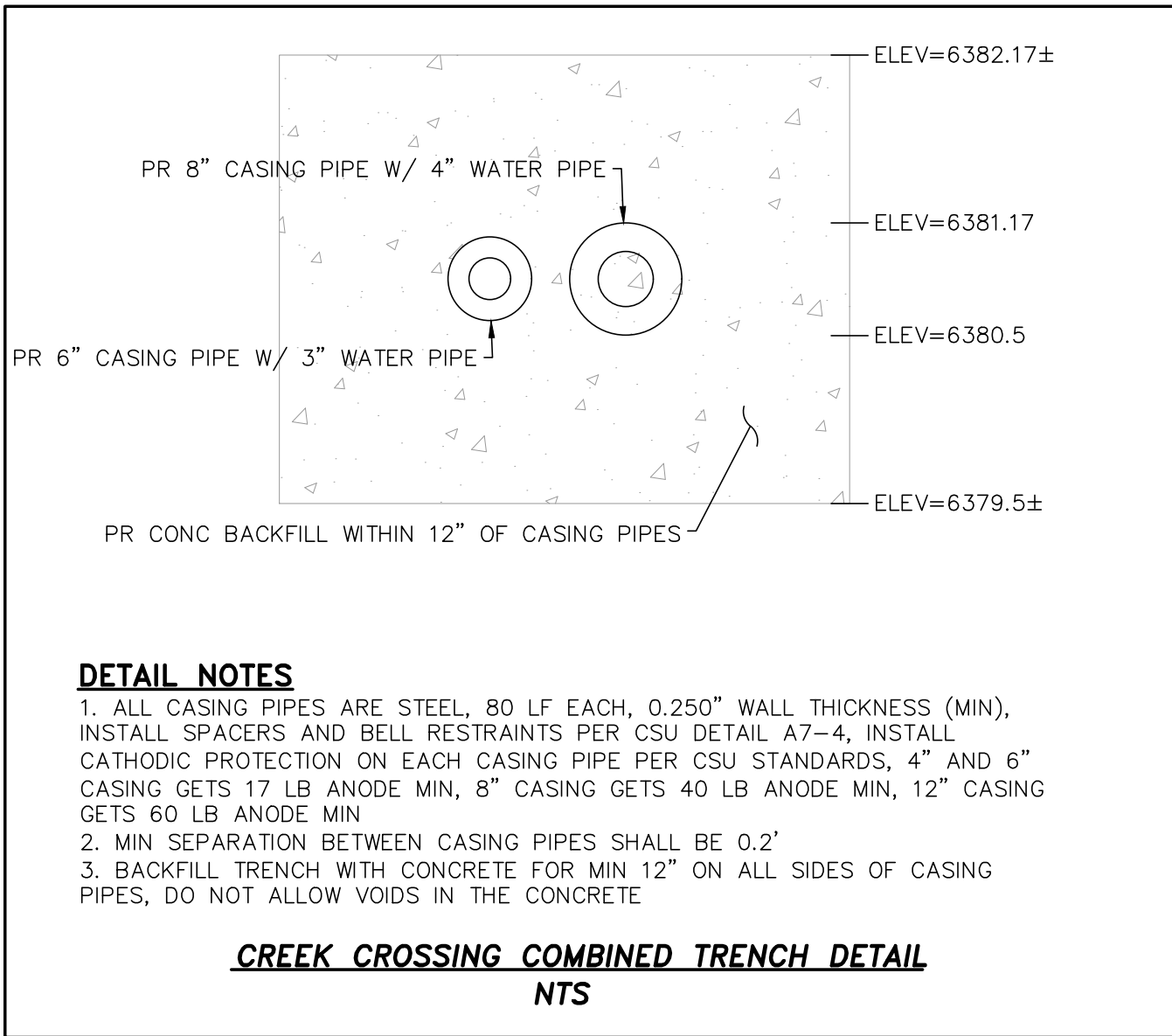
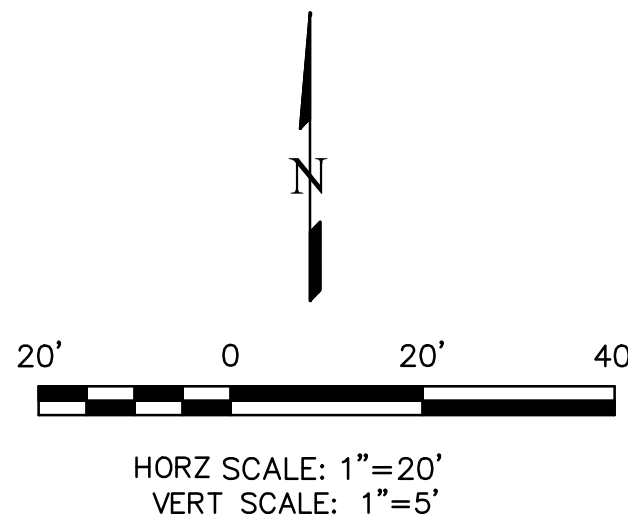


LEGEND

EXISTING CONTOURS - MAJOR	6500
EXISTING PROPERTY LINE	
EXISTING WATER LINE	WL
PROPOSED WATER LINE	W
SANITARY SEWER LINE	SS
GAS LINE	GAS
UNDERGROUND ELECTRICAL LINE	UE
TELEPHONE LINE	UT
FIBER OPTIC LINE	FO
STORM SEWER LINE	ST
OVERHEAD UTILITY LINE	OU
OVERHEAD ELECTRIC LINE	OE
PROPOSED EXISTING	PR
RAW WATER	RAW
POTABLE WATER	PW

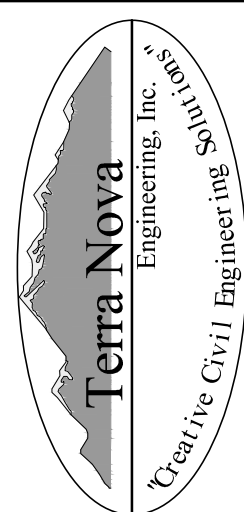
NOTES

1. PURPLE LINEWORK IS EXISTING WATER LINES THAT HAVE BEEN SKETCHED IN FROM OLD DOCUMENTS. THEIR LOCATIONS ARE APPROXIMATE.
2. MECHANICAL JOINT RESTRAINTS ARE REQUIRED AT ALL BENDS, TEES, AND VALVES 3" DIAMETER AND GREATER.
3. CTRBS SHALL BE CONSTRUCTED AT ALL TEES 3" AND LARGER OPPOSITE THE BRANCH.
4. CTRBS OR RESTRAINED PIPE LENGTHS SHALL BE CONSTRUCTED AT ALL HORIZONTAL BENDS.
5. A CRA IS REQUIRED TO BE SET ON THE UPSTREAM SIDE OF A LINE VALVE WHEN THE VALVE IS STAND ALONE AND DOES NOT HAVE ANOTHER APPURTENANCE TO TIE BACK TO.
6. VERTICAL BENDS SHALL BE RESTRAINED USING CRAS OR RESTRAINED JOINTS.
7. PIPES SLOPED GREATER THAN OR EQUAL TO 10% SHALL BE RESTRAINED THROUGHOUT THE SLOPE WITH A CRA AT BOTH THE TOP AND BOTTOM OF THE SLOPE.
8. CATHODIC PROTECTION IS REQUIRED FOR ALL STEEL PIPES AND CASING PIPES. ALL CATHODICALLY PROTECTED PIPES/CASING REQUIRE TEST STATIONS.
9. ALL PIPE MATERIAL IS TO BE DUCTILE IRON PIPE SIZED.



THIS DESIGN WAS PREPARED UNDER MY DIRECT SUPERVISION
FOR AND ON BEHALF OF TERRA NOVA ENGINEERING, INC.

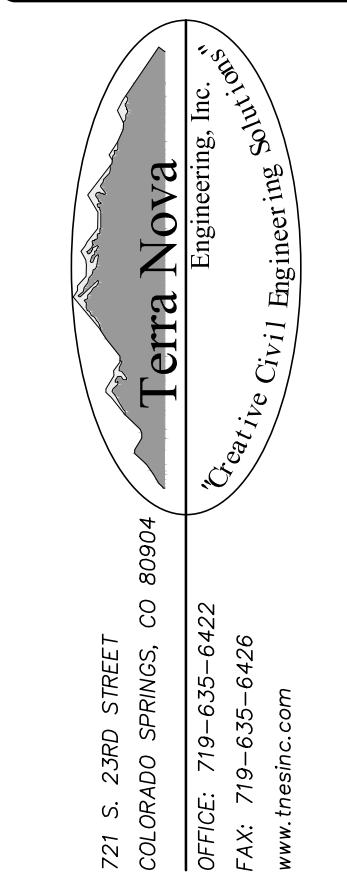
DANE FRANK
COLORADO P.E. NO. 50207

<div>UNTIL SUCH TIME AS THESE DRAWINGS ARE APPROVED BY THE APPROPRIATE ENGINEERING FIRM, TERRA NOVA ENGINEERING, INC. APPROVES THEIR USE ONLY FOR THE PROJECT DESIGNATED BY WRITTEN AUTHORIZATION.</div>		<div>PREPARED FOR: RRVE WATER DISTRICT ATTN: STEVE SOVAIKO 15580 CALA ROJO DRIVE COLORADO SPRINGS, CO 80926 719.359.6663</div>	
<div> Terra Nova Engineering, Inc. Creative Civil Engineering</div>		<div>721 S. 2960 STREET COLORADO SPRINGS, CO 80904 OFFICE: 719-635-6422 FAX: 719-635-6426 www.tnainc.com</div>	
<div>RED ROCK VALLEY ESTATES WATER DISTRICT</div>		<div>RAW/POTABLE WATER TRANSMISSION LINES PLANS WATER PLAN – CREEK CROSSING PLAN AND PROFILE SHEET</div>	
<div>DESIGNED BY DLF</div>		<div>DATE ISSUED 11/07/24</div>	
<div>DRAWN BY DLF</div>		<div>SHEET NO. 3 OF 12</div>	
<div>CHECKED BY LD</div>			
<div>H-SCALE AS SHOWN</div>			
<div>V-SCALE NA</div>			
<div>JOB NO. 2311.00</div>			

DESIGNED BY	DLF
DRAWN BY	DLF
CHECKED BY	LD
H-SCALE	AS SHOWN
V-SCALE	NA
JOB NO.	2311.00
DATE ISSUED	11/07/2011
SHEET NO.	4 OF 12

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PREPARED FOR:
RRVE WATER DISTRICT
ATTN: STEVE SOVAIKO
15580 CALA ROJO DRIVE
COLORADO SPRINGS, CO 80926
719.359.6663



CASING PIPE MINIMUM SIZES AND THICKNESSES
(TO BE VERIFIED BY THE DESIGN ENGINEER)
BASED ON ACTUAL LOADING AND SITE CONDITIONS

CASING PIPE NOMINAL SIZE (IN)	MIN. THICKNESS (IN)
12	0.250
14	0.312
16	0.312
18	0.312
20	0.375
24	0.500
32	0.500
36	0.625

CASING PIPE MINIMUM SIZES AND THICKNESSES ARE
BASED ON 80° LOADING. VARIANCES TO THESE
MINIMUMS MAY BE ALLOWED WITH SUPPORTING
CALCULATIONS FROM THE DESIGN ENGINEER

CARRIER PIPE:

- CARRIER PIPE SHALL BE CENTERED WITHIN CASING BY USE OF APPROVED STAINLESS STEEL CASING SPACERS AS MANUFACTURED BY APPROVED MANUFACTURER BY COLORADO SPRINGS UTILITIES. (REFERENCE CHAPTER 2)

PLACEMENT OF SPACERS ON CARRIER PIPE:

- GENERAL - ONE SPACER SHALL BE PLACED MAX. 2' FROM EACH END OF CASING AND ON EITHER SIDE OF EACH BELL OR MECHANICAL JOINT. SUBSEQUENT SPACERS SHALL BE PLACED AT 8' INTERVALS WITHIN THE CASING, OR IN ACCORDANCE WITH PIPE MANUFACTURERS RECOMMENDATIONS.

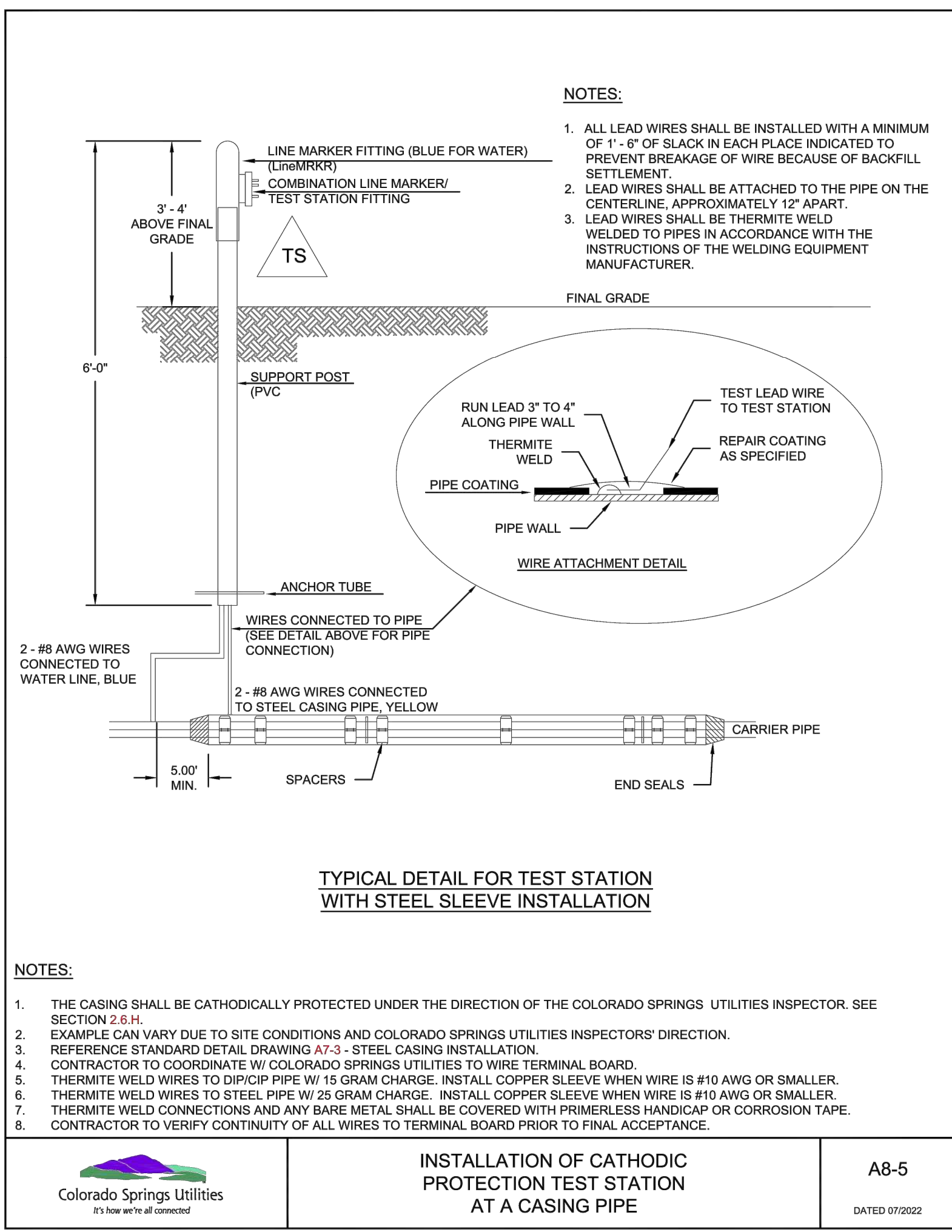
END SEALS:

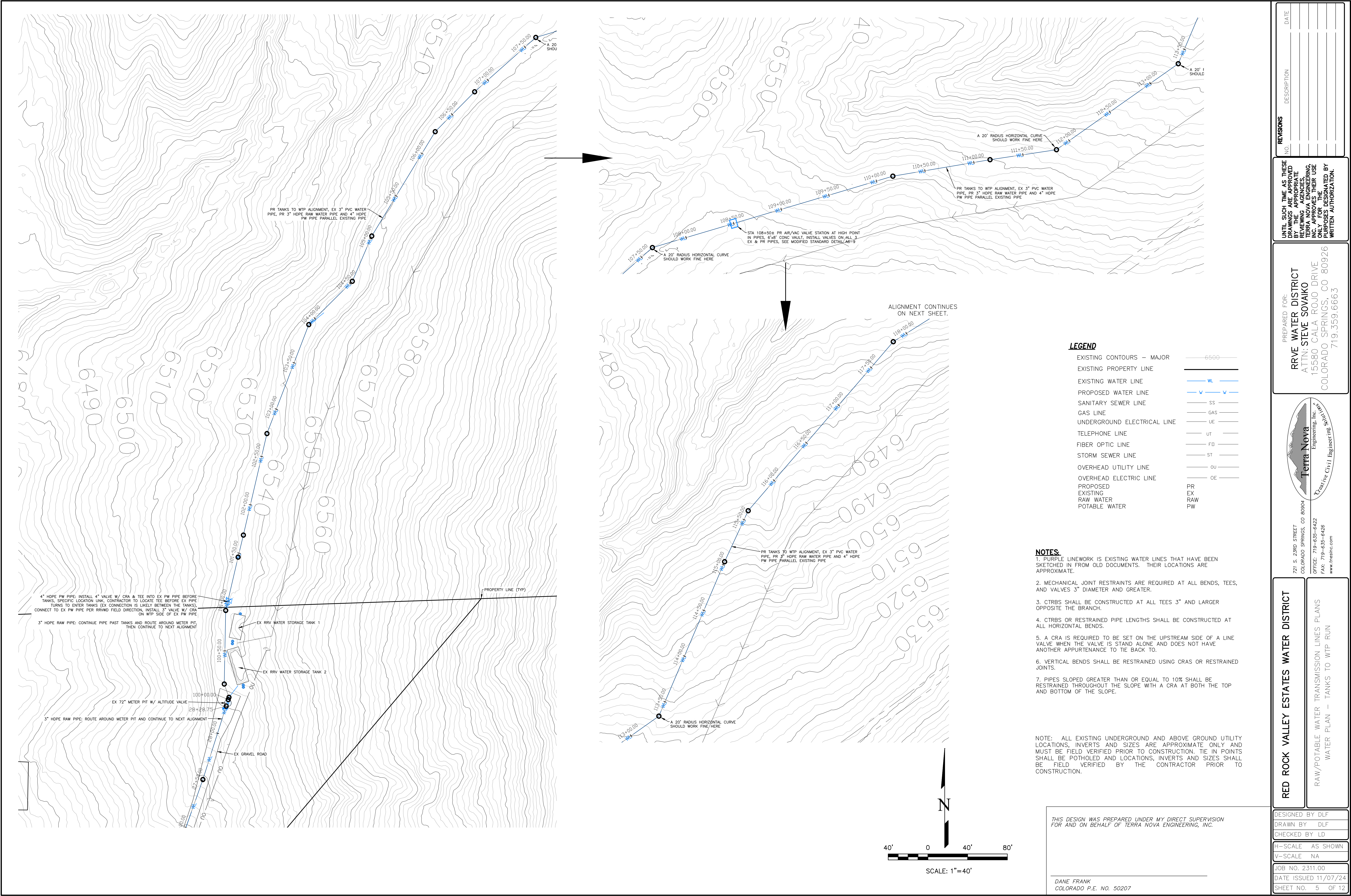
- END SEALS SHALL BE USED TO ENSURE A WATER TIGHT SEAL ON EITHER END OF THE CASING.

CATHODIC PROTECTION:

- CASING SHALL BE CATHODICALLY PROTECTED PER SECTION 2.6.H.

TYPICAL STEEL CASING INSTALLATION





REVISIONS	NO.	DESCRIPTION	DATE

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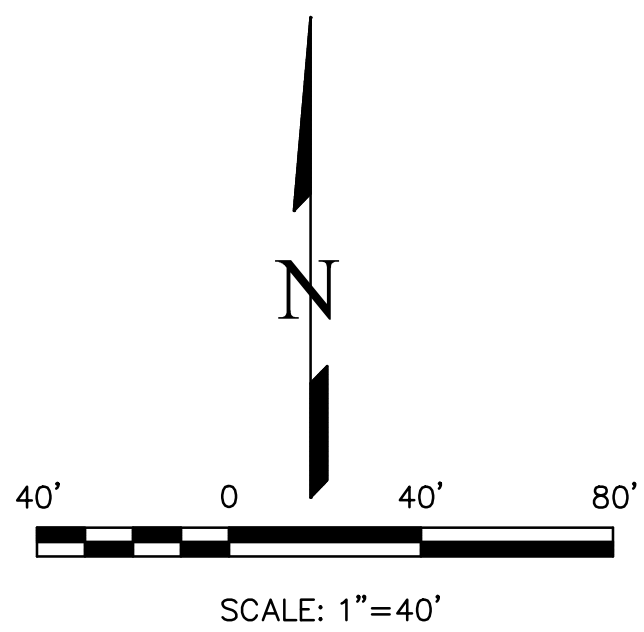
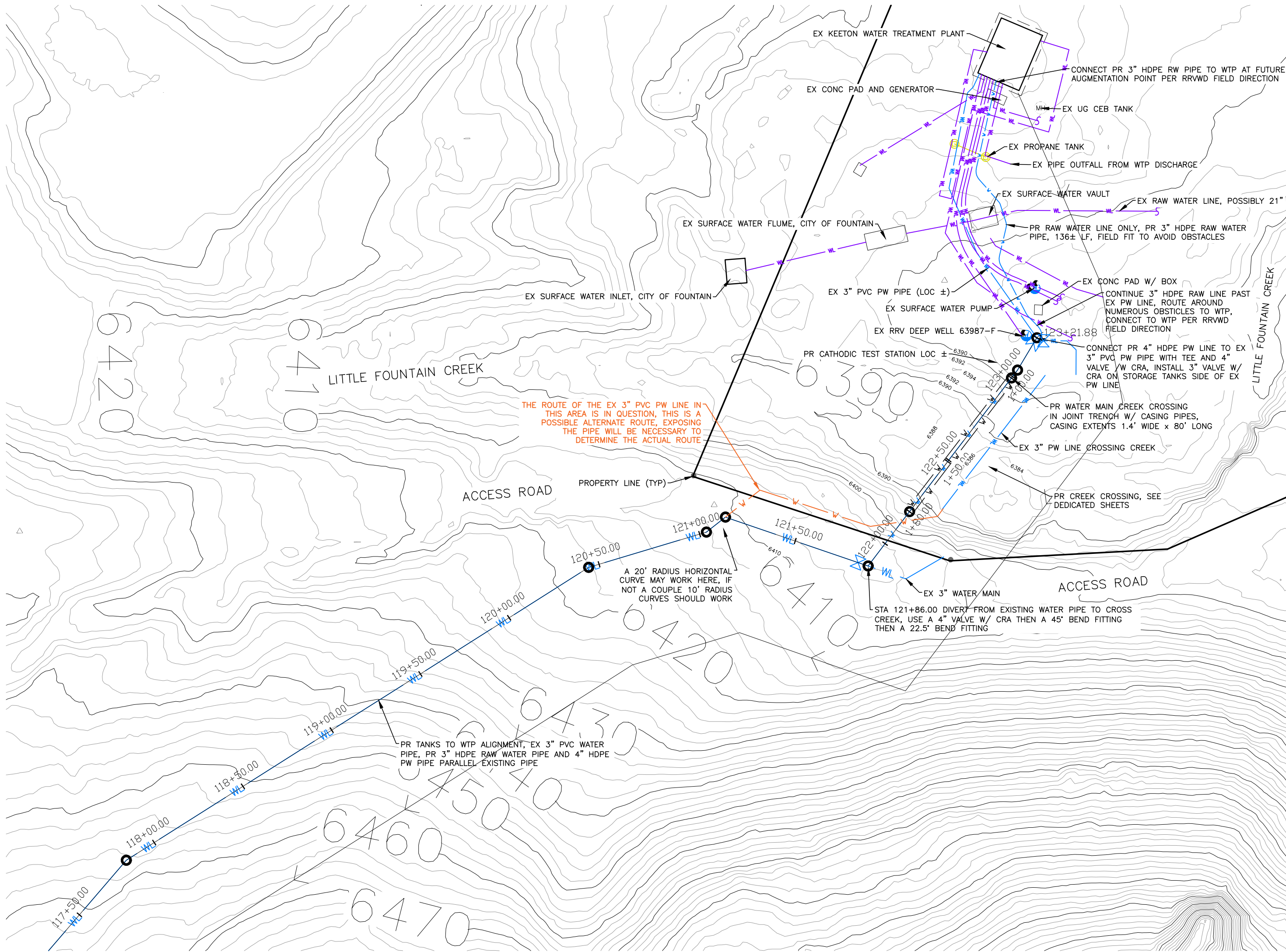
Terra Nova Engineering, Inc.
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www.tnaseinc.com

RED ROCK VALLEY ESTATES WATER DISTRICT

RAW/POTABLE WATER TRANSMISSION LINES PLANS
WATER PLAN — TANKS TO WTP RUN

DESIGNED BY DLF
DRAWN BY DLF
CHECKED BY LD
H-SCALE AS SHOWN
V-SCALE NA
JOB NO. 2311.00
DATE ISSUED 11/07/24
SHEET NO. 5 OF 12



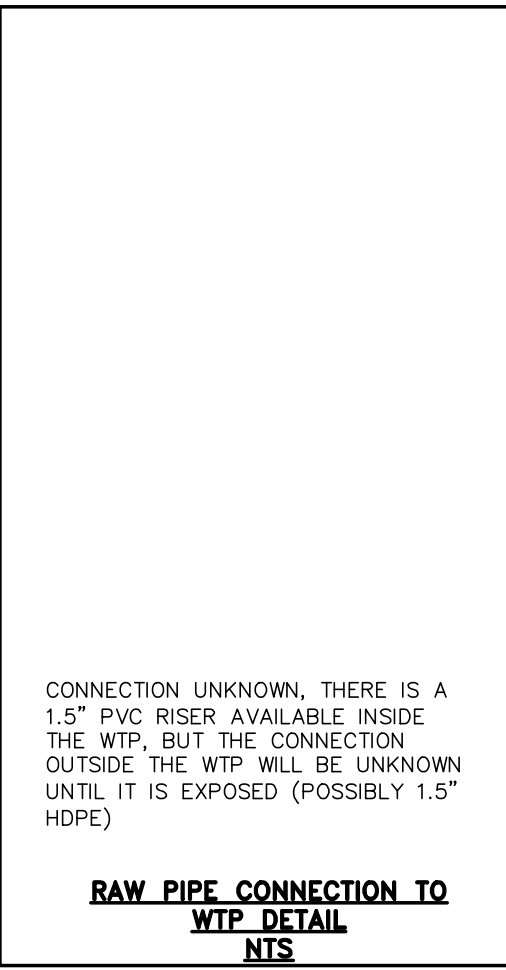
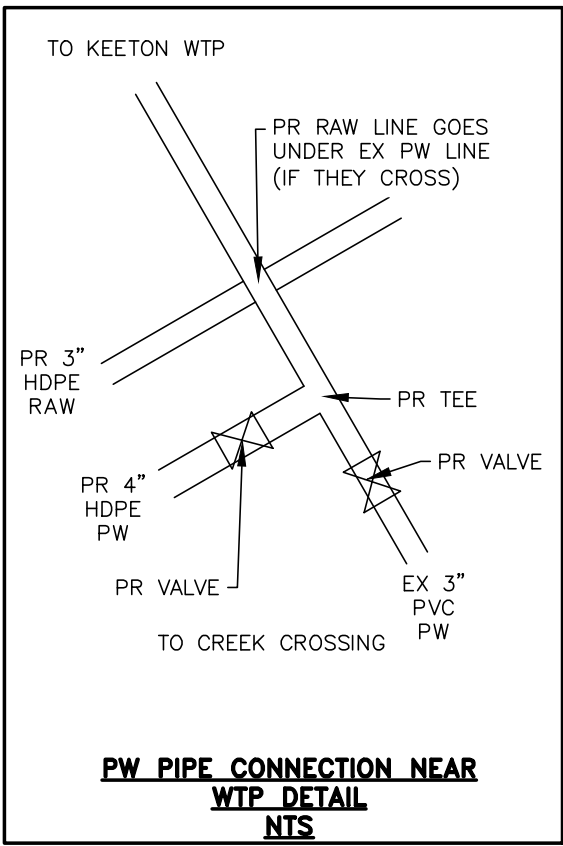
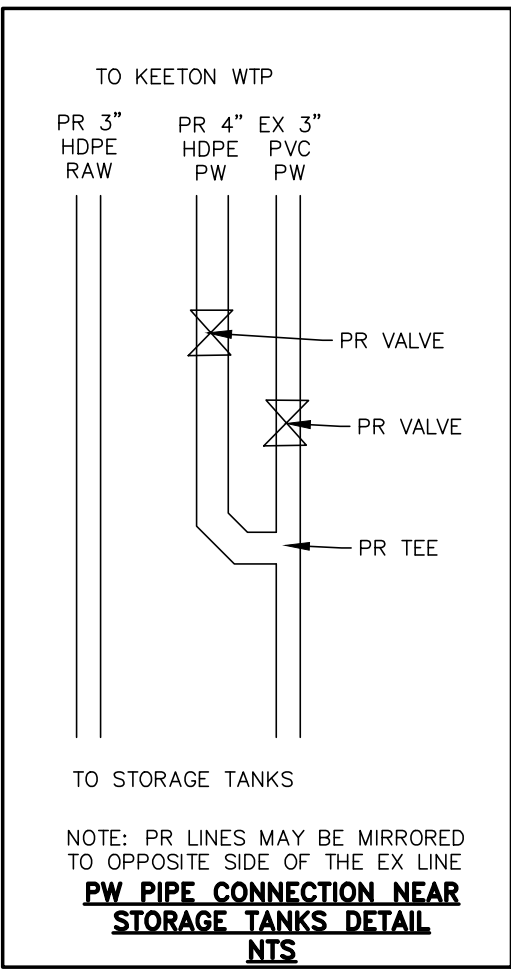
LEGEND

EXISTING CONTOURS - MAJOR	6500
EXISTING PROPERTY LINE	
EXISTING WATER LINE	WL
PROPOSED WATER LINE	W
SANITARY SEWER LINE	SS
GAS LINE	G
UNDERGROUND ELECTRICAL LINE	UE
TELEPHONE LINE	UT
FIBER OPTIC LINE	FO
STORM SEWER LINE	ST
OVERHEAD UTILITY LINE	OU
OVERHEAD ELECTRIC LINE	OE
PROPOSED	PR
EXISTING	EX
RAW WATER	RAW
POTABLE WATER	PW

NOTES

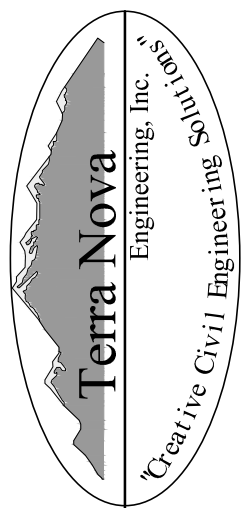
1. PURPLE LINEWORK IS EXISTING WATER LINES THAT HAVE BEEN SKETCHED IN FROM OLD DOCUMENTS. THEIR LOCATIONS ARE APPROXIMATE.
2. MECHANICAL JOINT RESTRAINTS ARE REQUIRED AT ALL BENDS, TEES, AND VALVES 3" DIAMETER AND GREATER.
3. CTRBS SHALL BE CONSTRUCTED AT ALL TEES 3" AND LARGER OPPOSITE THE BRANCH.
4. CTRBS OR RESTRAINED PIPE LENGTHS SHALL BE CONSTRUCTED AT ALL HORIZONTAL BENDS.
5. A CRA IS REQUIRED TO BE SET ON THE UPSTREAM SIDE OF A LINE VALVE WHEN THE VALVE IS STAND ALONE AND DOES NOT HAVE ANOTHER APPURTENANCE TO TIE BACK TO.
6. VERTICAL BENDS SHALL BE RESTRAINED USING CRAS OR RESTRAINED JOINTS.
7. PIPES SLOPED GREATER THAN OR EQUAL TO 10% SHALL BE RESTRAINED THROUGHOUT THE SLOPE WITH A CRA AT BOTH THE TOP AND BOTTOM OF THE SLOPE.

NOTE: ALL EXISTING UNDERGROUND AND ABOVE GROUND UTILITY LOCATIONS, INVERTS AND SIZES ARE APPROXIMATE ONLY AND MUST BE FIELD VERIFIED PRIOR TO CONSTRUCTION. TIE IN POINTS SHALL BE POTHOLED AND LOCATIONS, INVERTS AND SIZES SHALL BE FIELD VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION.

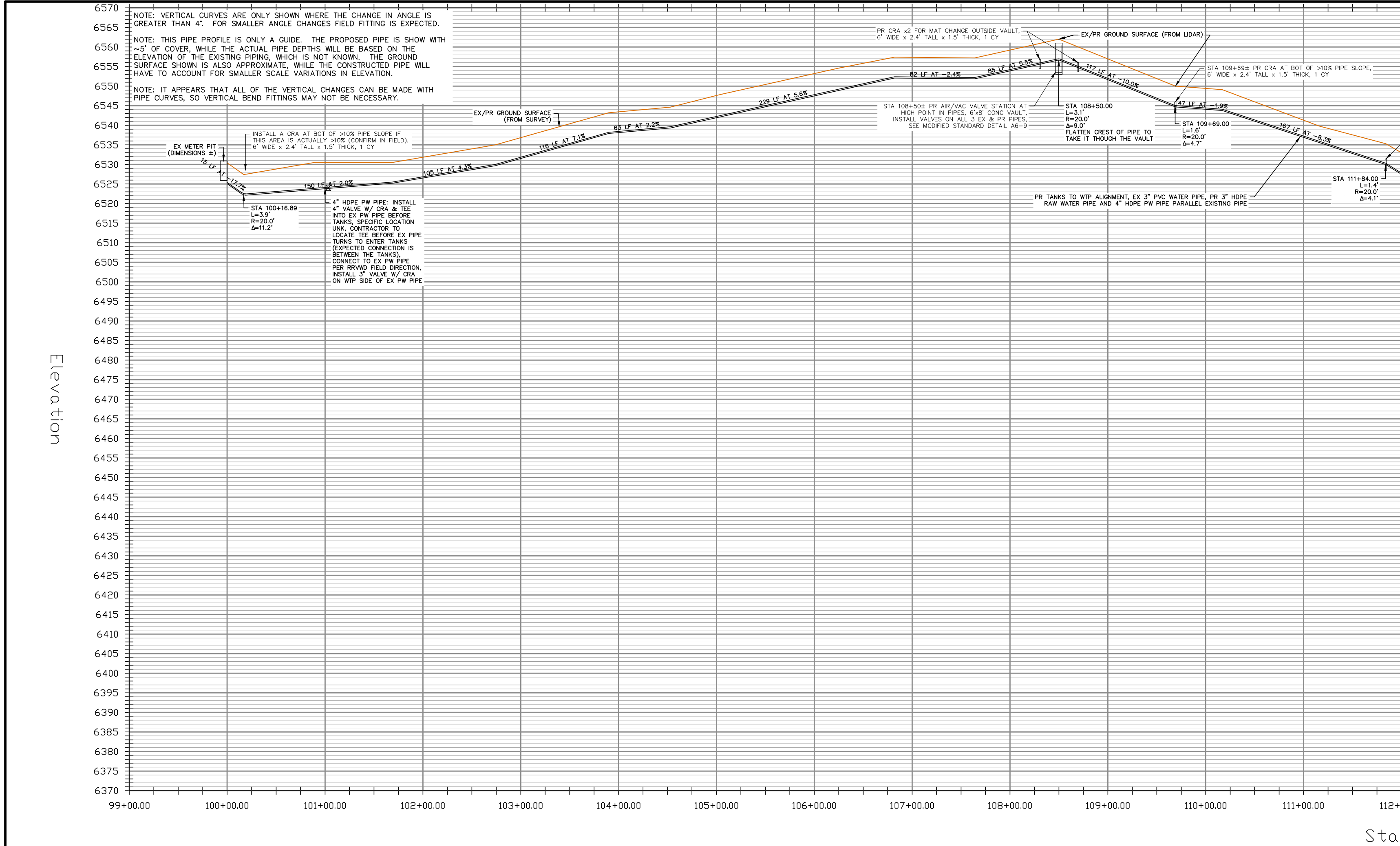


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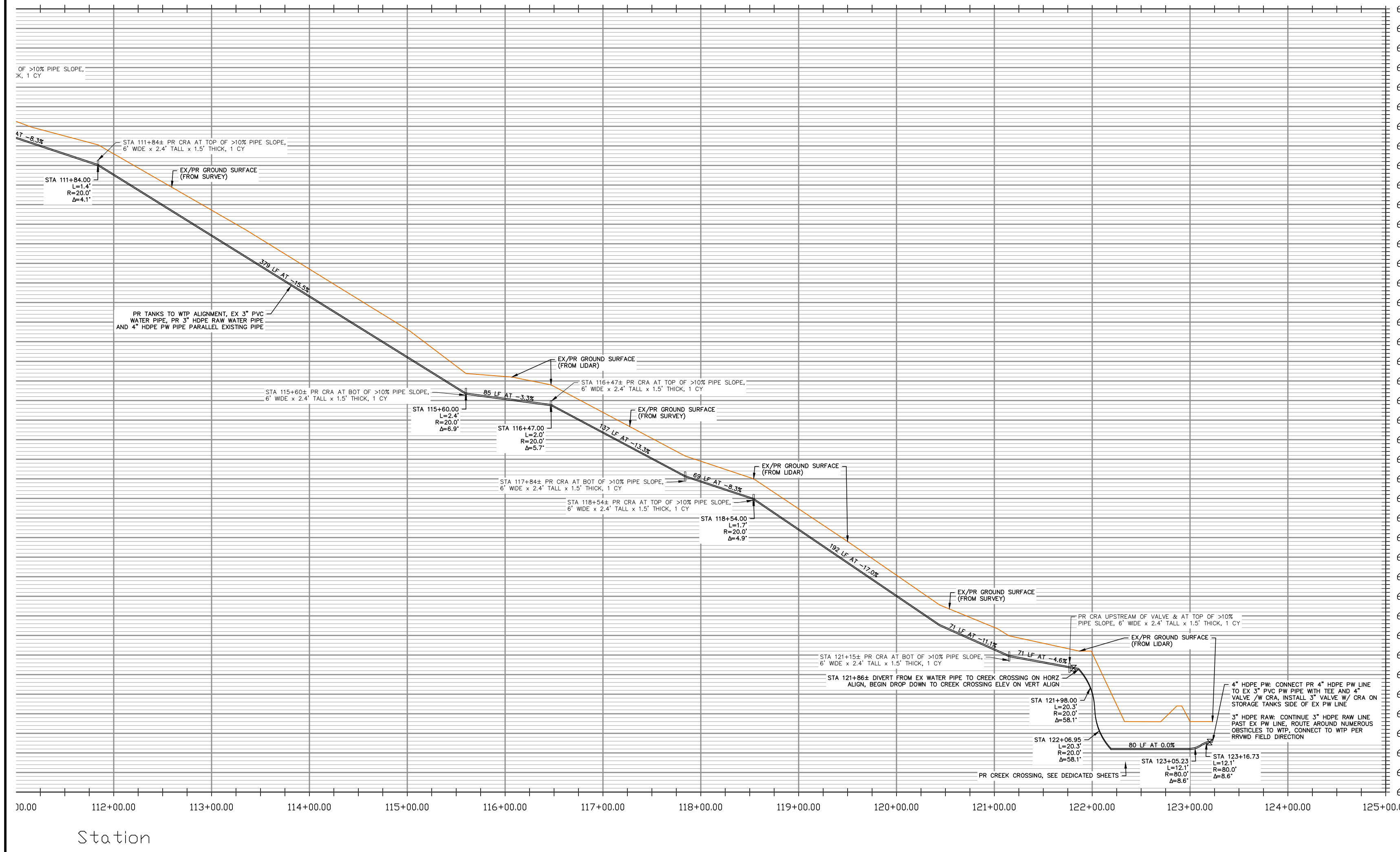
DANE FRANK
COLORADO P.E. NO. 50207

REVISIONS	NO.	DESCRIPTION	DATE
UNTIL SUCH TIME AS THESE DRAWINGS ARE APPROVED BY THE REVIEWING AGENCIES, THE REVIEWING AGENCIES, TERRA NOVA ENGINEERING, INC. APPROVES THEIR USE ONLY FOR THE PROJECT AND SITE SPECIFICALLY DESIGNATED BY WRITTEN AUTHORIZATION.			
PREPARED FOR: RRVE WATER DISTRICT ATTN: STEVE SOVAIKO 15580 CALA ROJO DRIVE COLORADO SPRINGS, CO 80926 719.359.6663			
 721 S. 2960 STREET COLORADO SPRINGS, CO 80904 OFFICE: 719-635-6422 FAX: 719-635-6426 www.tnaseinc.com			
RED ROCK VALLEY ESTATES WATER DISTRICT			
RAW/POTABLE WATER TRANSMISSION LINES PLANS WATER PLAN - TANKS TO WTP RUN			
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V-SCALE NA		JOB NO. 2311.00	
DATE ISSUED 11/07/24		SHEET NO. 6 OF 12	

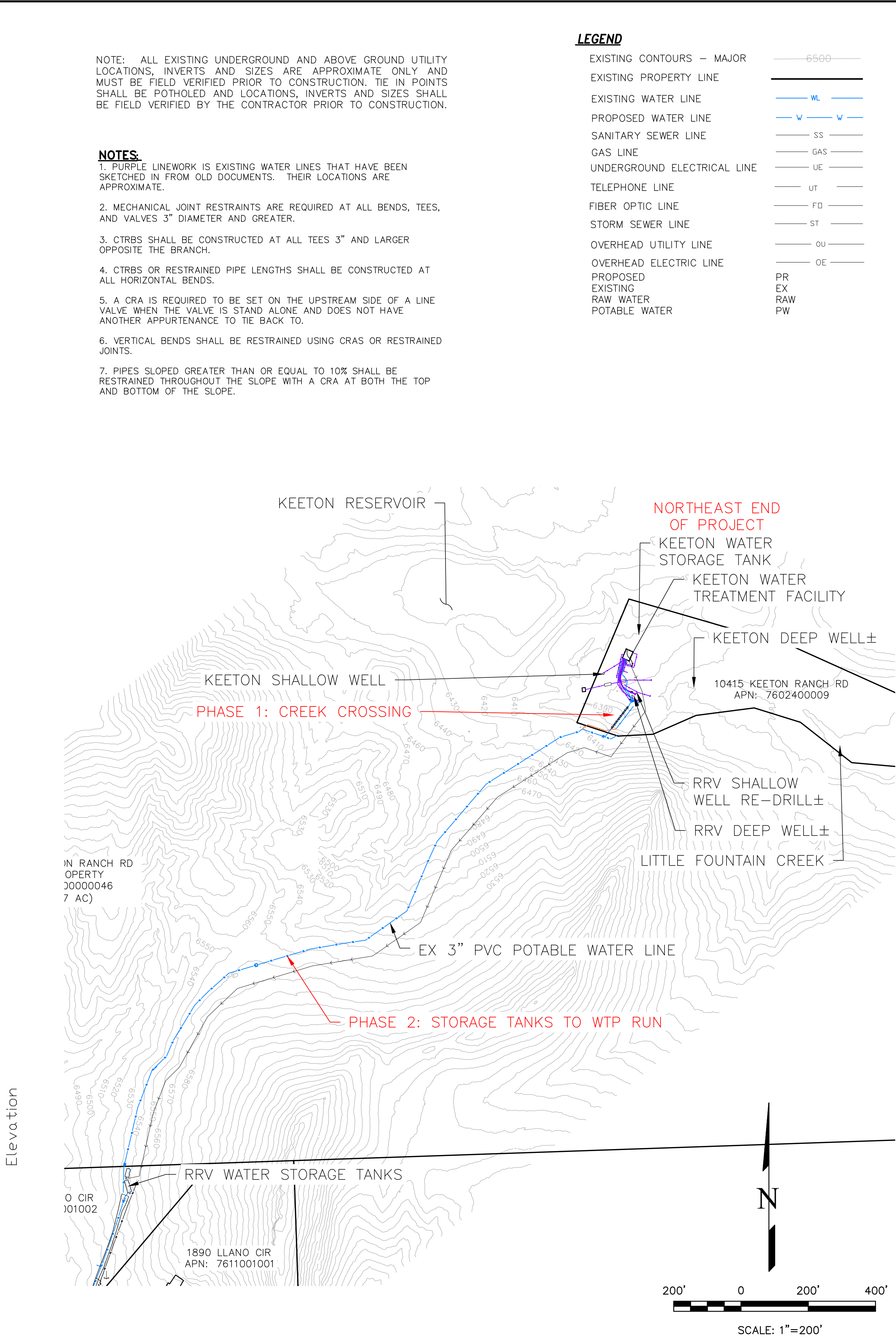
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TANKS TO WTP RUN - PROFILE VIEW
HORZ SCALE: 1"=80' - VERT SCALE: 1"=20'



Sta



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LEGEND

EXISTING CONTOURS - MAJOR	6500
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EXISTING WATER LINE	WL
PROPOSED WATER LINE	W
SANITARY SEWER LINE	SS
GAS LINE	GAS
UNDERGROUND ELECTRICAL LINE	UE
TELEPHONE LINE	UT
FIBER OPTIC LINE	FO
STORM SEWER LINE	ST
OVERHEAD UTILITY LINE	OU
OVERHEAD ELECTRIC LINE	OE
PROPOSED EXISTING RAW WATER POTABLE WATER	PR EX RAW PW

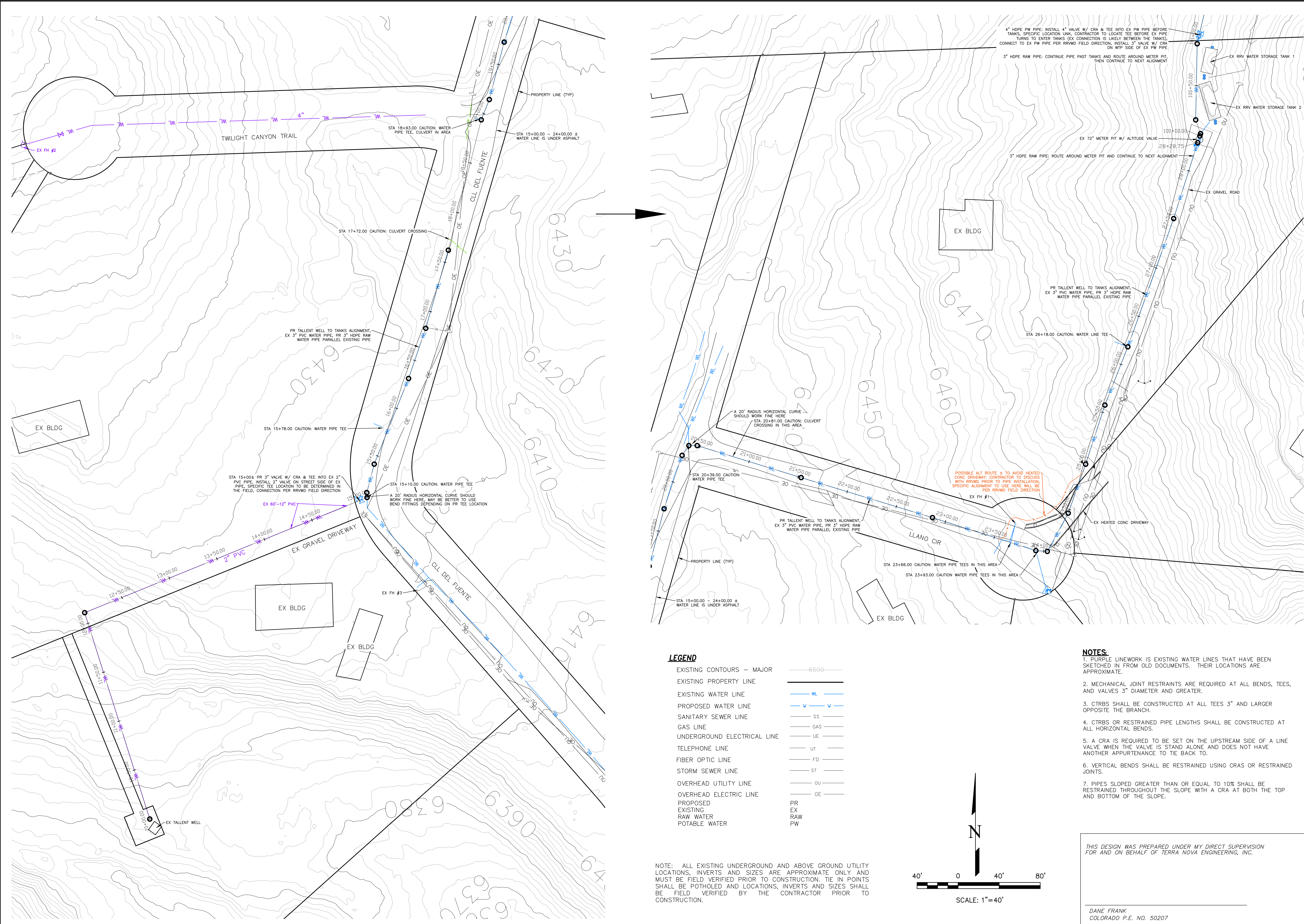
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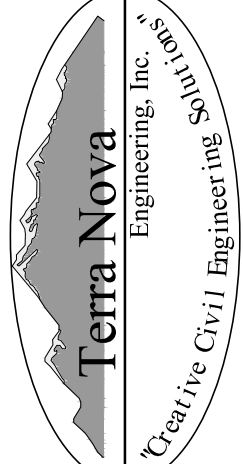
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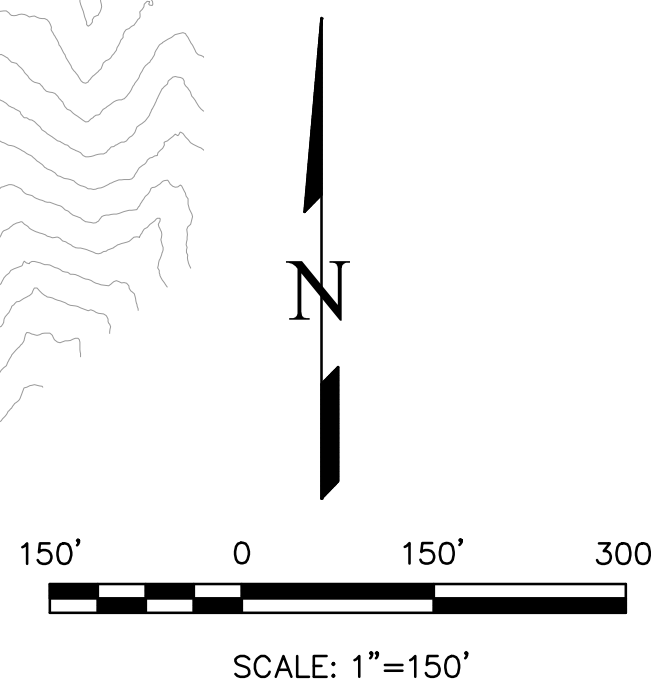
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PREPARED FOR: RRVE WATER DISTRICT ATTN: STEVE SOVAIKO 15580 CALA ROJO DRIVE COLORADO SPRINGS, CO 80926 719.359.6663	
Terra Nova Engineering, Inc. Creative Civil Engineering Inc.	
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NOTES:

1. PIPELINE LINEWORK IS EXISTING WATER LINES THAT HAVE BEEN SKETCHED IN FROM OLD DOCUMENTS. THEIR LOCATIONS ARE APPROXIMATE.
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COLORADO P.E. NO. 50207

NOTE: VERTICAL CURVES ARE ONLY SHOWN WHERE THE CHANGE IN ANGLE IS GREATER THAN 4'. FOR SMALLER ANGLE CHANGES FIELD FITTING IS EXPECTED.

NOTE: THIS PIPE PROFILE IS ONLY A GUIDE. THE PROPOSED PIPE IS SHOWN WITH -8" OF COVER WHILE THE ACTUAL PIPE DEPTHS WILL BE BASED ON THE ELEVATION OF THE EXISTING PIPING, WHICH IS NOT KNOWN. THE GROUND SURFACE SHOWN IS ALSO APPROXIMATE. WHILE THE CONSTRUCTED PIPE WILL HAVE TO ACCOUNT FOR SMALLER SCALE VARIATIONS IN ELEVATION.

NOTE: IT APPEARS THAT ALL OF THE VERTICAL SLOPE CHANGES CAN BE MADE WITH PIPE CURVES, SO VERTICAL BEND FITTINGS MAY NOT BE NECESSARY.

STA 15+00+00
START OF ASPHALT

EX/PR GROUND SURFACE (FROM LIBRARY)

EX/PR GROUND SURFACE (FROM SURVEY)

15' LF AT -0.5%

317' LF AT 0.5%

STA 15+00+00 PR 3" VALVE W/ CRA & TEE
- INTO EX 24" PVC PIPE. INSTALL 2" VALVE ON STREET SIDE OF EX PIPE. SPECIFIC TEE LOCATION TO BE DETERMINED IN THE FIELD. CONNECTION PER RRVWD FIELD DIRECTION

203' LF AT 10.1%

STA 21+00+00 PR CRA AT BOT OF 310% PIPE SLOPE.
6" WIDE x 2.4' TALL x 1.0' THICK, 1' LF

PR TALLENT WELL TO TANKS ALIGNMENT, EX 3" PVC WATER PIPE.
PR 3" HDPE RAW WATER PIPE PARALLEL EXISTING PIPE

START OF GRAVEL ACCESS ROAD

STA 24+76+10
HEATED CONC DRIVEWAY OVER WATER LINE

STA 24+10+10
END OF ASPHALT

419' LF AT 10.7%

STA 28+30+10
END OF GRAVEL ACCESS ROAD


EX METER PIT (DIMENSIONS 8')

3" HDPE RAW PIPE. ROUTE AROUND METER PIT AND CONTINUE TO NEXT ALIGNMENT

STA 28+22+10 PR CRA AT TOP OF 3410% PIPE SLOPE, 6" WIDE x 2.4' TALL x 1.0' THICK, 1' LF (THIS LOCATION LIKELY NEEDS TO MOVE BASED ON FIELD CONDITIONS)

Elevation

Station

RED ROCK VALLEY ESTATES WATER DISTRICT		<div><p>Terra Nova Engineering, Inc. <i>Creative Civil Engineering Solutions</i></p></div>	UNTI, SUCH TIME AS THESE DRAWINGS ARE APPROVED BY THE APPROPRIATE REVIEWING AGENCIES, TERRA NOVA ENGINEERING, INC., ACCEPTS THEIR USE ONLY FOR THE PURPOSES DESIGNATED BY WRITTEN AUTHORIZATION.	
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