LAKE OUACHITA WATER SUPPLY PROJECT

CONTRACT 1

RAW WATER SUPPLY TRANSMISSION PIPELINE PROJECT
BLAKELY MOUNTAIN DAM ROAD TO OUACHITA WATER TREATMENT PLANT

BID SET

GARLAND COUNTY, ARKANSAS

PREPARED FOR:

CITY OF HOT SPRINGS UTILITIES DEPARTMENT

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JUNE 2020

CRIST PROJECT NO. 1926

CRIST ENGINEERS, INC.
CONSULTING ENGINEERS
LITTLE ROCK, ARKANSAS

CONTACTS

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VOICE: 800.482.8998

CONTRACTOR

T.B.D.

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FAX: --

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STATE FIRE MARSHAL
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ENTERGY

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SPENCER DIXON
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4155 CLAY STREET
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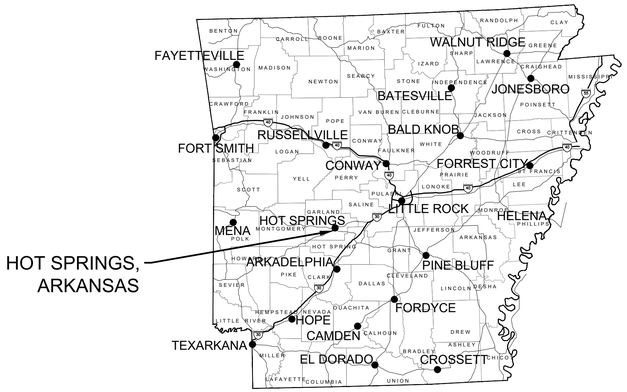
CRIST ENGINEERS, INC. CONSULTING ENGINEERS No. 91 — CORPORATE REGISTRATION — ARKANSAS ENGINEER

STATE OF ARKANSAS — REGISTERED PROFESSIONAL ENGINEER — No. 7996 — KELLY D. VANLANDINGHAM — 6/18/20

P:\2019 Projects\1926 - CHS Lake Ouachita Water Supply - Raw & Finished Lines\09 - RAW Water Contracts\01 - Contract 1\06 - CADD\05 - RAW Water Line\1 - Construction\CONTRACT 1\1926 - CONTRACT 1-COVER.dwg 6/18/2020 10:52 AM

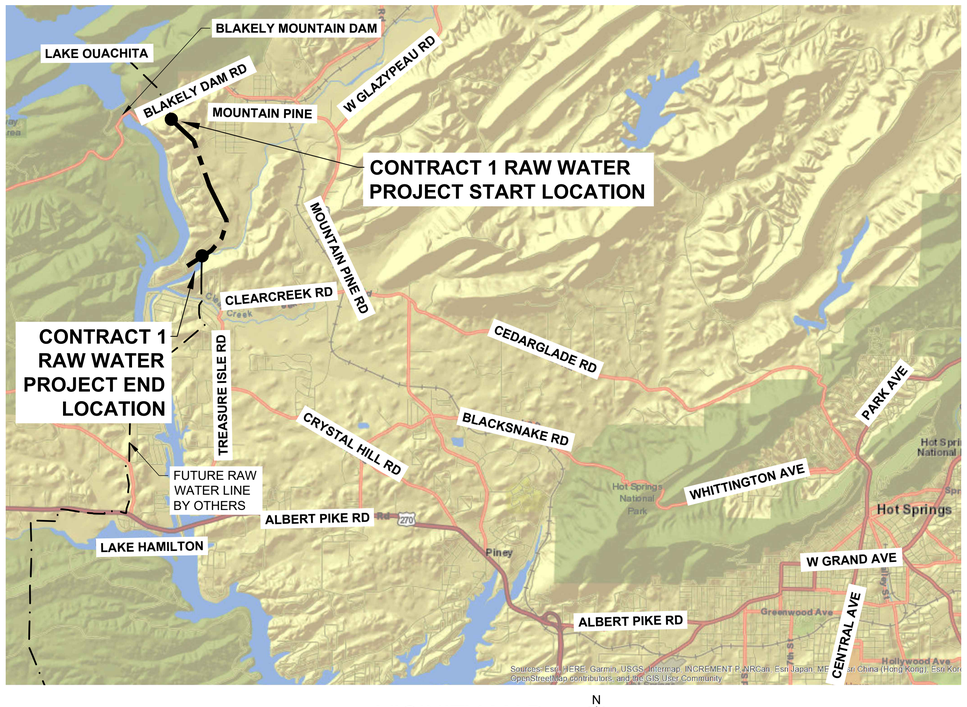
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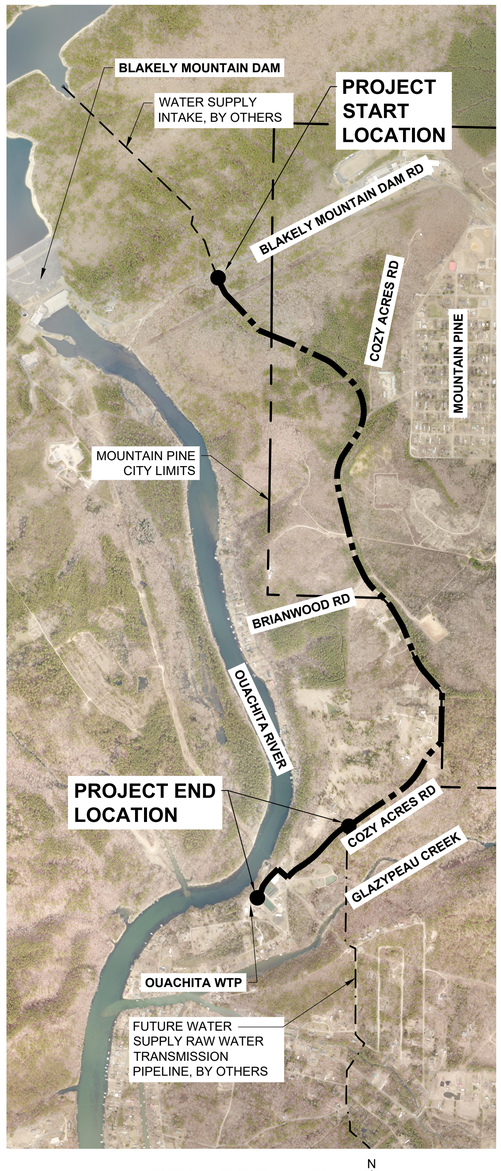
LOCATION MAP

N.T.S.



VICINITY MAP

N.T.S.



PROJECT MAP

SCALE: 1" = 1000'

LEGEND

- EXISTING WATER LINE
- PROPOSED WATER LINE
- EXISTING AIR RELEASE VALVE
- PROPOSED AIR RELEASE VALVE
- EXISTING FIRE HYDRANT
- PROPOSED FIRE HYDRANT
- PROPOSED STEEL ENCASEMENT PIPE
- EXISTING STORM CULVERTS
- EXISTING SIGNS
- EXISTING WATER METER
- EXISTING WATER VALVE
- PROPOSED WATER VALVE
- EXISTING SEWER CLEAN OUT
- EXISTING UNDERGROUND ELECTRIC LINE
- EXISTING OVERHEAD ELECTRIC LINE
- EXISTING POWER POLE
- EXISTING GUY WIRE
- EXISTING UNDERGROUND FIBER OPTIC CABLE
- EXISTING OVERHEAD TELEPHONE LINE
- EXISTING UNDERGROUND TELEPHONE LINE
- EXISTING TELEPHONE PEDESTAL
- EXISTING MAILBOX
- EXISTING NATURAL GAS LINE
- EXISTING BARBED WIRE FENCE
- EXISTING CHAIN LINK FENCE
- EXISTING IRON FENCE
- MAJOR GROUND CONTOUR
- MINOR GROUND CONTOUR
- ROCK DITCH CHECKS
- DITCH FLOWLINE
- EXISTING WATER LINE EASEMENT
- PROPOSED WATER LINE EASEMENT
- ROAD RIGHT-OF-WAY
- PROPERTY LINE
- OZARK NATIONAL FOREST BOUNDARY
- FLOODPLAIN BOUNDARY
- CAVE BLASTING LIMITS
- EXISTING TREE LINE
- BENCHMARK
- SILT FENCE

REV. NO.	DATE	DRWN	CHKD	REMARKS

CRIST ENGINEERS, INC. CONSULTING ENGINEERS No. 91 — CORPORATE REGISTRATION — ARKANSAS ENGINEER

STATE OF ARKANSAS — REGISTERED PROFESSIONAL ENGINEER — No.7996 — KELLY D. VANLANDINGHAM — 6/18/20

0 50' — 1" = 50'-0"

0 1" — 1" = 1"

THIS LINE MEASURES 1" WHEN PLOTTED FULL SIZE

DESIGNED:	KDV
DRAFTED:	RDW
CHECKED:	MDD
DATE:	JUN 2020

CRIST ENGINEERS, INC.
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GARLAND COUNTY, ARKANSAS

CITY OF HOT SPRINGS UTILITIES DEPARTMENT
LAKE OUACHITA WATER SUPPLY PROJECT

RAW WATER TRANSMISSION PIPELINE

CONTRACT 1 - BLAKELY MOUNTAIN DAM RD TO OUACHITA WTP
VICINITY MAPS & LEGEND

JOB NO. 1926

SHEET NO. 2

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P:\2019 Projects\1926 - CHS Lake Ouachita Water Supply - Raw & Finished Lines\09 - RAW Water Contracts\01 - Contract 1\06 - CADD\05 - RAW Water Line\1 - Construction\CONTRACT 1\1926 - CONTRACT 1-GENERAL NOTES & CONTACTS.dwg

GENERAL NOTES

1. DEFINITIONS
   - A. OWNER - CITY OF HOT SPRINGS, ARKANSAS
   - B. ENGINEER - CRIST ENGINEERS, INC.
   - C. GOVERNMENT - ANY CITY, COUNTY, STATE OR FEDERAL GOVERNMENTAL ENTITY.
2. SAFETY
   - A. JOBSITE SAFETY IS THE SOLE AND EXCLUSIVE RESPONSIBILITY OF THE GENERAL CONTRACTOR.
   - B. THIS RESPONSIBILITY COVERS CONTRACTOR'S OWN WORK FORCE, ALL SUBCONTRACTORS, VISITING PERSONNEL, OFFICIALS, AND THE GENERAL PUBLIC WHICH MAY HAVE ACCESS TO THE JOBSITE.
   - C. THE CONTRACTOR SHALL EXERCISE COMPLETE CONTROL OVER WHO HAS ACCESS TO THE JOBSITE TO ENSURE JOBSITE SAFETY.
   - D. THE CONTRACTOR SHALL CONFORM TO ALL SECURITY AND SAFETY REQUIREMENTS OF THE OWNER.
   - E. ANY SAFETY OR OTHER TRAINING REQUIRED BY THE OWNER FOR THE WORK FORCE MUST BE PROVIDED BY THE CONTRACTOR AT THE CONTRACTOR'S EXPENSE.
   - F. CONTRACTOR IS RESPONSIBLE FOR FURNISHING AND INSTALLING TEMPORARY EXCAVATION SUPPORT SYSTEMS, INCLUDING SHEETING, SHORING, AND BRACING TO INSURE THE SAFETY OF PERSONNEL AND PROTECT ADJACENT STRUCTURES, PIPING, ETC. IN ACCORDANCE WITH FEDERAL, STATE, AND LOCAL LAWS, REGULATIONS, AND REQUIREMENTS.
3. PERMITS
   - A. ACCESS PERMITS FROM THE U.S. ARMY CORPS OF ENGINEERS AND THE U.S. FOREST SERVICE HAS BEEN OBTAINED BY OTHERS.
   - B. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING ANY STATE, CITY OR COUNTY REQUIRED PERMITS FOR THIS WORK.
   - C. CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR COMPLYING WITH THE TERMS AND CONDITIONS ASSOCIATED WITH EACH PERMIT, AS WELL AS ADHERING TO THE RULES AND REGULATIONS OF EACH REGULATING AUTHORITY.
4. CONTRACT DOCUMENTS
   - A. ALL WORK SHALL CONFORM TO THE PLANS, THESE NOTES, AND SPECIFICATIONS IN ALL RESPECTS AND SHALL BE SUBJECT TO APPROVAL BY THE ENGINEER.
   - B. THESE GENERAL NOTES SHALL BE CONSIDERED AS PART OF THE CONTRACT DOCUMENT AND AS SUPPLEMENTAL CONDITIONS.
5. CONSTRUCTION PROCEDURES, MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE FOLLOWING STANDARDS UNLESS OTHERWISE MODIFIED ON THE DRAWINGS OR IN THESE NOTES OR SPECIFICATIONS.
   - A. CITY OF HOT SPRINGS ENGINEERING STANDARD SPECIFICATIONS AND STANDARD TERMS AND CONDITIONS FOR WATER AND WASTEWATER PROJECTS.
   - B. TECHNICAL SPECIFICATIONS - ATTACHED SEPARATELY (SEE PROJECT MANUAL).
   - C. ARKANSAS DEPARTMENT OF TRANSPORTATION - STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION (BY REFERENCE IN THE TECHNICAL SPECIFICATIONS).
   - D. INTERNATIONAL BUILDING CODE.
   - E. LOCAL BUILDING CODES, SPECIFICATIONS, AND REGULATIONS.
6. CONSTRUCTION LIMITS
   - A. UNDER NO CIRCUMSTANCES IS THE CONTRACTOR TO PERFORM WORK OR CAUSE DAMAGE BEYOND THE DESIGNATED WORK LIMITS.
   - B. SURVEYING AND DEMARKATION OF THE PROJECT LIMITS WILL BE PROVIDED BY THE CONTRACTOR.
7. UTILITIES
   - A. UNDERGROUND UTILITIES EXIST WITHIN AND ADJACENT TO THE LIMITS OF CONSTRUCTION. NOT ALL EXISTING UTILITIES MAY BE SHOWN ON THE DRAWINGS, AND ACTUAL LOCATION OF THE UTILITIES MAY VARY FROM THE LOCATION SHOWN ON THE DRAWINGS. PRIOR TO BEGINNING ANY TYPE OF EXCAVATION, THE CONTRACTOR SHALL CONTACT ARKANSAS ONE CALL, AND MAKE ARRANGEMENTS FOR THE LOCATION OF ALL UTILITIES UNDER THE GROUND. THE CONTRACTOR SHALL MAINTAIN THE UTILITY MARKINGS UNTIL THEY ARE NO LONGER NECESSARY.
   - B. LOCATIONS OF EXISTING UTILITIES WERE DETERMINED IN THE FIELD WHERE POSSIBLE, SUCH AS MANHOLE LOCATIONS, VALVE BOXES ON EXISTING PIPING, AND DRAINAGE CULVERTS. BEFORE ANY TRENCHING COMMENCES, THE CONTRACTOR SHALL EXPOSE ALL EXISTING UTILITY AND PROCESS LINES WHICH ARE TO BE CROSSED OR CONNECTED WITH NEW PIPING, AND DETERMINE THE POTENTIAL FOR CONFLICTS. CONFLICTS SHALL BE REPORTED TO THE ENGINEER IMMEDIATELY AND TRENCHING SHALL NOT COMMENCE UNTIL ALL CONFLICTS ARE RESOLVED.
   - C. NO EXCAVATIONS WERE MADE TO CONFIRM SUB-SURFACE UTILITIES. NEITHER THE SURVEYOR NOR PROJECT ENGINEER GUARANTEES THAT ALL UTILITIES HAVE BEEN SHOWN, OR THAT THOSE SHOWN ARE FULLY ACCURATE.
   - D. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ADJUSTMENTS AND/OR RELOCATION OF EXISTING UTILITIES THAT ARE DAMAGED AS A RESULT OF WORK OF THIS PROJECT.
   - E. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING AND PROPERLY DISCONNECTING, ABANDONING, RELOCATING, AND/OR ADJUSTING ALL AFFECTED UTILITIES WITHIN THE PROJECT AREA.
   - F. ALL UTILITY WORK SHALL BE COORDINATED AND EXECUTED IN ACCORDANCE WITH THE OWNER AND/OR GOVERNING UTILITY COMPANY CODES, SPECIFICATIONS, STANDARDS, AND REQUIREMENTS.
8. SUBSURFACE INVESTIGATION
   - A. A GEO-TECHNICAL INVESTIGATIONS OF SUB-SURFACE MATERIALS HAS BEEN PERFORMED.
   - B. A REPORT OF THE FINDINGS CAN BE PROVIDED UPON REQUEST.
9. DISPOSAL OF DEBRIS, WASTE OR SPOIL
   - A. BURNING OF DEBRIS AND WASTE IS NOT ALLOWED.
   - B. CONTRACTOR MAY BE REQUIRED TO PROPERLY HAUL AWAY AND DISPOSE OF ANY WASTE MATERIAL REMOVED FROM THE SITE.
   - C. EXISTING MATERIALS LABELED "TO BE REMOVED" IN THESE PLANS SHALL BE REMOVED AND DISPOSED OF ON SITE AS DIRECTED BY THE OWNER OR ENGINEER. REMOVAL AND DISPOSAL CONSIDERED SUBSIDIARY TO ALL OTHER ITEMS IN THE PROJECT, AND WILL NOT BE PAID FOR SEPARATELY.
   - D. ANY WASTE OR SPOIL MATERIAL WHICH IS EXCAVATED FROM THE JOB SITE IS TO BE DISPOSED OF AS DIRECTED BY THE OWNER.
   - E. UNLESS OTHERWISE NOTED ON THE DRAWINGS, DEMOLISHED ASPHALT PAVEMENT AND CONCRETE AND UNCLASSIFIED EXCAVATION SHALL BE REMOVED OFFSITE AND CONSTRUCTION MATERIAL SHALL BE DISPOSED OF AT AN APPROVED LANDFILL OR SITE.
10. SUBSTITUTIONS
    - A. SUBSTITUTIONS ARE NOT ALLOWED WITHOUT PRIOR APPROVAL FROM THE PROJECT ENGINEER OR OWNER.
11. MAINTENANCE OF TRAFFIC
    - A. CONTRACTOR IS RESPONSIBLE FOR MAINTENANCE OF TRAFFIC THROUGHOUT THE LIFE OF THE PROJECT.
    - B. AT NO TIME IS BLAKELY MOUNTAIN DAM ROAD OR COZEY ACRES ROAD TO BE CLOSED TO TRAFFIC.
12. LAYDOWN AREA
    - A. LAYDOWN AREAS MAY BE CONSTRUCTED AND/OR DESIGNATED FOR USE DURING CONSTRUCTION OF THIS PROJECT.
    - B. LAYDOWN AREAS ARE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
13. FIELD OFFICE
    - A. THE CONTRACTOR SHALL PROVIDE SUITABLE ACCESS WITHIN THE PROJECT AREA TO THE PLANS AND SPECIFICATIONS FOR ENGINEERS, THE OWNER'S STAFF, THE U.S. FOREST SERVICE, THE U.S. ARMY CORPS OF ENGINEERS, AND CONTRACTOR EMPLOYEES AND SUBCONTRACTORS.
    - B. A FIELD OFFICE BUILDING IS NOT REQUIRED FOR THIS PROJECT.
14. ENVIRONMENTAL
    - A. THE CONTRACTOR IS TO MEET ALL ENVIRONMENTAL REQUIREMENTS OF THE OWNER AND ANY REGULATORY AGENCY.
    - B. THE CONTRACTOR IS RESPONSIBLE FOR PREPARING A STORM WATER POLLUTION PREVENTION PLAN MEETING ARKANSAS DEPARTMENT OF ENVIRONMENTAL QUALITY REQUIREMENTS.
    - C. ALL AREAS DISTURBED BY THIS WORK SHALL BE CLEANED, GRADED, TOPSOIL REPLACED, FERTILIZED, SEEDED, MULCHED, AND WATERED FOLLOWING COMPLETION AS REQUIRED IN THE STANDARD SPECIFICATIONS FOR SEEDING, TOPSOIL, AND CLEANUP, BEST MANAGEMENT PRACTICES, AND THE STORM WATER POLLUTION PREVENTION PLAN (SWPPP).
    - D. ANY DISTURBED AREAS THAT ARE LEFT UNATTENDED FOR TWO WEEKS OR MORE, BUT MORE WORK IS ANTICIPATED AT A LATER TIME, MUST BE STABILIZED IN ACCORDANCE WITH THE SWPPP.
    - E. PER THE REQUIREMENTS SHOWN IN THE SWPPP, CONTRACTOR SHALL ERECT TEMPORARY SEDIMENT AND EROSION CONTROLS PRIOR TO STARTING WORK; AND SHALL MAINTAIN DRAINAGE AND EROSION CONTROLS FOR THE DURATION OF THE CONSTRUCTION WORK. THE TEMPORARY EROSION CONTROL DEVICES ARE TO BE REMOVED UPON COMPLETION OF THE WORK AS PART OF OVERALL CLEANUP ACTIVITIES.
    - F. CONTRACTOR SHALL KEEP CURRENT COPY OF THE SWPPP ON SITE AT ALL TIMES.
    - G. A NOTICE OF INTENT (NOI) SHALL BE FILED WITH THE ARKANSAS DEPARTMENT OF ENVIRONMENTAL QUALITY (ADEQ) BY THE CONTRACTOR FOR THE PROJECT TO BE COVERED UNDER THE ARKANSAS GENERAL PERMIT FOR STORMWATER DISCHARGES ASSOCIATED WITH CONSTRUCTION ACTIVITIES.
    - H. CONTRACTOR SHALL KEEP WORK AREA CLEAN AND FREE OF ACCUMULATED TRASH AND DEBRIS. CONTRACTOR SHALL BE RESPONSIBLE FOR IMPLEMENTING MEASURES TO AVOID TRACKING OF MUD, DIRT, ROCKS, AND DEBRIS ONTO AREAS OUTSIDE THE PROJECT AREA. CONTRACTOR SHALL CLEAN PAVEMENTS WHEN NECESSARY OR AS OTHERWISE DIRECTED, AND SHALL CONTROL DUST BY SWEEPING AND WATERING AS NEEDED. DE-TRACKING MAY BE REQUIRED AT ALL ENTRANCES.
    - I. THE CONTRACTOR SHALL BE RESPONSIBLE FOR AND SHALL PAY ALL COSTS ASSOCIATED WITH FINES OR PENALTIES THAT MAY BE IMPOSED BY THE GOVERNMENTAL AUTHORITY FOR THE FAILURE OF THE CONTRACTOR, THE CONTRACTOR'S SUBCONTRACTORS, THE CONTRACTOR'S SUPPLIERS, OR THE CONTRACTOR'S AGENTS HAVING ACCESS TO THE SITE TO COMPLY WITH THE REQUIREMENTS OF THE GENERAL PERMIT AND/OR COMPLY WITH THE STORM WATER POLLUTION PREVENTION PLAN. THE OWNER SHALL BE ENTITLED TO WITHHOLD SUCH FROM CONTRACT FUNDS THAT MAY BE DUE TO THE CONTRACTOR AND/OR CLAIM THROUGH THE APPROPRIATE COURT HAVING JURISDICTION.
    - J. THE CONTRACTOR SHALL BE REQUIRED TO PROVIDE THE POSTING AND MAINTENANCE OF NOTICES IN THE AREA OF THE CONSTRUCTION WITH INFORMATION AS REQUIRED BY ADEQ REGULATION.
    - K. THE CONTRACTOR SHALL BE REQUIRED TO MAINTAIN AND UPDATE RECORDS AND INSPECTIONS REPORTS REQUIRED BY THE GENERAL PERMIT FROM STORM WATER DISCHARGES AND THE SPECIFIC STORM WATER POLLUTION PREVENTION PLAN. COPIES OF ALL DOCUMENTS SHALL BE AVAILABLE AT ALL TIMES AND PROVIDED TO THE OWNER AND/OR THE OWNER'S REPRESENTATIVE UPON DEMAND AND SHALL BE DELIVERED TO THE OWNER PRIOR TO FINAL PAYMENT.
    - L. INFORMATION REGARDING THE STORM WATER POLLUTION PREVENTION PLAN AND THE PERTINENT REGULATION MAY BE ACCESSED AT WWW.ADEQ.STATE.AR.US
15. CONFLICT IN CONTRACT DOCUMENTS
    - A. IN THE CASE THAT CONFLICT BETWEEN THESE NOTES AND THE TECHNICAL SPECIFICATIONS OCCURS, THESE GENERAL NOTES WILL PREVAIL.
    - B. CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS AND DIMENSIONS BEFORE STARTING WORK. SHOULD CONDITIONS EXIST WHICH ARE CONTRARY TO THOSE SHOWN ON THE PLANS, THE ENGINEER SHALL BE NOTIFIED BEFORE PROCEEDING WITH THE WORK.
    - C. CONTRACTOR SHALL IMMEDIATELY REPORT AND DOCUMENT ANY KNOWN OR SUSPECTED ERRORS, OVERSIGHTS, INCONSISTENCIES, CONFLICTS, OR AMBIGUOUS INFORMATION TO THE PROJECT ENGINEER THAT THE CONTRACTOR DISCOVERS WITHIN THE CONTRACT DOCUMENTS AND/OR FIELD CONDITIONS; AND SHALL NOT PROCEED WITH ANY WORK THAT IS AFFECTED BY THE MATTER OF CONCERN UNTIL IT HAS BEEN FULLY RESOLVED AND ANY COST ADJUSTMENTS HAVE BEEN MET. THE PROJECT ENGINEER AND THE OWNER SHALL BE HELD HARMLESS IN THE EVENT THE PROJECT ENGINEER IS NOT IMMEDIATELY NOTIFIED OF CONFLICTS OR PROBLEMS, OR IF THE CONTRACTOR SHOULD FAIL TO CEASE WORK AND PROVIDE IMMEDIATE NOTIFICATION UPON ITS DISCOVERY.
16. SITE WORK
    - A. SURVEY CONTROL POINTS ARE SHOWN ON THE DRAWINGS. ALL CONTROL POINTS AND LAND MONUMENTS LOCATED WITHIN AND ADJACENT TO THE CONSTRUCTION AREA SHALL BE PROTECTED DURING ALL PHASES OF CONSTRUCTION. ANY DISTURBED MONUMENTATION SHALL BE RE-ESTABLISHED BY A PROFESSIONAL LAND SURVEYOR. THE COST OF RE-ESTABLISHING THE MONUMENTATION SHALL BE BORNE BY THE CONTRACTOR.
    - B. RIM AND INVERT ELEVATIONS ON EXISTING MANHOLES AND DRAINAGE STRUCTURES ARE INCLUDED FOR INFORMATION PURPOSES ONLY. THE CONTRACTOR SHALL NOT USE THESE ELEVATIONS AS BENCHMARKS UNDER ANY CIRCUMSTANCES. PRIOR TO CONSTRUCTION INVOLVING THESE STRUCTURES, IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO CONFIRM ALL EXISTING ELEVATIONS.
    - C. THE PERMANENT EASEMENT IS TO BE COMPLETELY CLEARED AND GRUBBED AS DESCRIBED IN THE SPECIFICATIONS. THE TEMPORARY EASEMENT IS TO BE CLEARED AS REQUIRED FOR INSTALLATION OF THE NEW PIPELINE OR APPURTENANCES. WHERE CONSTRUCTION IS PARALLEL AND ADJACENT TO A ROAD RIGHT OF WAY OR POWER LINE EASEMENT, CONTRACTOR IS TO REMOVE ALL TREES TO THE RIGHT OF WAY OR EASEMENT LINE. CARE SHALL BE USED TO INSURE THAT ALL TREES NOT TO BE REMOVED ARE PROTECTED FROM CONSTRUCTION OPERATIONS. CONSTRUCTION EQUIPMENT SHALL NOT WORK WITHIN THE DRIP LINE OF TREES TO BE PROTECTED. REMOVED TREES ARE TO BE DISPOSED OF AS APPROVED BY THE OWNER, SEE GENERAL NOTES.
    - D. CRUSHER SCREENINGS (CRUSHER DUST) MAY NOT BE USED AS SELECT FILL IN EMBANKMENT.
    - E. THE CONTRACTOR SHALL MAINTAIN POSITIVE SITE DRAINAGE AT ALL TIMES.
    - F. THE GROUND SURFACE DISTURBED BY CONSTRUCTION ACTIVITIES SHALL BE GRADED TO DRAIN AWAY FROM THE DISTURBANCE. ALL ROCK AND DEBRIS (4" DIAMETER AND LARGER) SHALL BE REMOVED AND DISPOSED OF OFF THE JOB SITE.
    - G. WHERE IT IS NECESSARY TO CUT EXISTING ASPHALT OR CONCRETE PAVEMENT FOR TRENCHING, PAVEMENT REPAIR OR MATCHING NEW CONSTRUCTION, THE CONTRACTOR SHALL SAW CUT THE EXISTING PAVEMENT TO PROVIDE A STRAIGHT EDGE, AND SMOOTH TRANSITION. AND SHALL REPAIR THE ROADWAY PER LOCAL REQUIREMENTS AND ACCORDING TO THE DETAILS IN THE PLANS.
    - H. THE CONTRACTOR SHALL DE-WATER STRUCTURAL AND TRENCH EXCAVATION IN ACCORDANCE WITH THE SPECIFICATIONS.
    - I. THE CONTRACTOR SHALL, BY REPAIR OR REPLACEMENT, RETURN TO EQUAL OR BETTER CONDITION ALL PAVEMENT, FENCES, LAWNS, UTILITIES, AND OTHER ITEMS DAMAGED BY THIS CONSTRUCTION ACTIVITY OR OPERATIONS.
    - J. THE CONTRACTOR SHALL PROTECT ALL LAND SURVEY CORNER MONUMENTS. ANY CORNER MONUMENTS WHICH ARE DAMAGED OR OBLITERATED BY THE CONTRACTOR ARE TO BE REPLACED AT THE CONTRACTORS EXPENSES.
17. SITE PIPING
    - A. ALLOW PIPING MATERIALS FOR THIS PROJECT INCLUDE:
      - a. SPIRAL WELDED STEEL PIPE
      - b. DUCTILE IRON PIPE
    - B. ALL STEEL PIPING SHALL MEET THE REQUIREMENTS OF THE STEEL PIPE SPECIFICATIONS, AS INCLUDED IN SECTION 331102 OF THE PROJECT SPECIFICATIONS.
    - C. ALL DUCTILE IRON WATER LINES SHALL BE CONSTRUCTED BY ONE OF THE FOLLOWING METHODS MEETING SECTION 331113 OF THE PROJECT SPECIFICATIONS:
    - D. PRESSURE CLASSES FOR EACH PIPE MATERIAL IS SHOWN ON SHEET 4 OF THESE PLANS.
    - E. ALL TRENCHING, BACKFILL AND BEDDING TO MEET REQUIREMENTS SHOWN IN THE DETAILS AND SPECIFICATIONS FOR THIS PROJECT.
    - F. THE MINIMUM DEPTH OF COVER FOR PIPING IS 36 INCHES (36").
    - G. THE CONTRACTOR SHALL NOTIFY THE OWNER AT LEAST 48 HOURS PRIOR TO SCHEDULED CONNECTIONS OF ANY WORK INVOLVING WATER PIPING. INTERRUPTION OF WATER SERVICE SHALL BE KEPT TO A MINIMUM. SCHEDULING SHALL BE SUBJECT TO THE APPROVAL OF THE OWNER AND THE ENGINEER.
    - H. TESTING LINES - ALL LINES SHALL BE TESTED UNLESS OTHERWISE DIRECTED BY THE ENGINEER. ALL TESTING SHALL BE PERFORMED IN THE PRESENCE OF THE ENGINEER OR THE ENGINEER'S REPRESENTATIVE. ALL LINES SHALL BE CLEAN PRIOR TO PERFORMING TESTS. TESTING SHALL INCLUDE HYDROSTATIC TESTING AS REQUIRED IN THE SPECIFICATIONS.
    - I. THE CONTRACTOR SHALL MAINTAIN ALL ADJACENT WATER LINES IN SERVICE DURING CONSTRUCTION, EXCEPT AS ALLOWED BY THE OWNER AND THE ENGINEER. IN ALL CASES, THE CONTRACTOR SHALL PROVIDE ADEQUATE SHORING, PIPE SUPPORT, AND/OR TRENCH BOXES TO MAINTAIN THE INTEGRITY OF THE EXISTING PIPING.
    - J. ALL SITE PIPING THAT CONNECTS TO STRUCTURES SHALL INCLUDE A DOUBLE FLEXIBLE PIPE CONNECTION TO ACCOMMODATE DIFFERENTIAL SETTLING OF THE STRUCTURE. CONCRETE ENCASED PIPES UNDER STRUCTURES SHALL BE TERMINATED OUTSIDE THE STRUCTURE WITH A DOUBLE FLEXIBLE CONNECTION. THE DOUBLE FLEXIBLE CONNECTION SHALL BE A MJ X MJ SLEEVE JOINT OR DOUBLE MJ BELL, NO MORE THAN 24 INCHES APART.
    - K. MAINTAIN TEN (10) FEET HORIZONTAL DISTANCE A MINIMUM VERTICAL CLEARANCE OF 18" BETWEEN WATER MAIN AND STORM DRAIN OR SANITARY SEWER MAIN, AS A MINIMUM.
    - L. STORM AND SANITARY SEWERS CROSSING UNDER WATER MAINS SHALL BE LAID TO PROVIDE A MINIMUM VERTICAL DISTANCE OF EIGHTEEN (18) INCHES BETWEEN THE INVERT OF THE UPPER PIPE AND THE CROWN OF THE LOWER PIPE. WHERE THIS MINIMUM SEPARATION CANNOT BE MAINTAINED, THE CROSSING SHALL BE ARRANGED SO THAT THE SEWER PIPE JOINTS AND THE WATER MAIN JOINTS ARE EQUIDISTANT FROM THE POINT OF CROSSING WITH NO LESS THAN TEN (10) FEET BETWEEN ANY TWO JOINTS AND BOTH PIPES SHALL BE DUCTILE IRON (DI). WHERE THERE IS NO ALTERNATIVE TO SEWER PIPES CROSSING OVER A WATER MAIN, THE CRITERIA FOR MINIMUM SEPARATION BETWEEN LINES AND JOINTS IN THE ABOVE SHALL BE REQUIRED AND BOTH PIPES SHALL BE DUCTILE IRON IRRESPECTIVE OF SEPARATION. DUCTILE IRON IS NOT REQUIRED FOR STORM SEWERS.
    - M. INFORMATION ON THE PLANS REGARDING THE LOCATION AND ANGLE OF FITTINGS ARE SHOWN FOR INFORMATIONAL PURPOSES ONLY FOR SPIRAL WELDED STEEL PIPE ONLY. CONTRACTOR TO VERIFY ALL FITTINGS AND SUBMIT A PIPING LAYOUT PLAN.
    - N. PIPE ALIGNMENT AND PROFILE INFORMATION SHOWN IN THE PLANS IS APPROXIMATE. CONTRACTOR IS TO VERIFY THE INFORMATION SHOWN AND PROVIDE ADJUSTMENTS AS NEEDED IN THE PIPING SUBMITTALS.
    - O. MIXING OF PIPE MATERIALS MUST BE APPROVED BY THE OWNER OR ENGINEER PRIOR TO SUBMITTAL OF BIDS FOR THE WORK.
18. GENERAL DEMOLITION NOTES
    - A. CONTRACTOR TO CLEAR AND GRUB FULL WIDTH OF THE PERMANENT EASEMENTS FOR THE ENTIRE LENGTH OF THE PROPOSED WATER LINE, EXCEPT IN ROADWAYS.
    - B. WITHIN THE TEMPORARY EASEMENTS THE CONTRACTOR IS TO CLEAR AND GRUBB ONLY THE AREA NEEDED FOR CONSTRUCTION.
19. CONCRETE NOTES
    - A. CONCRETE POURED-IN-PLACE FOR THRUST BLOCKS SHALL HAVE A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF 3000 PSI, OR AS SHOWN IN THE TECHNICAL SPECIFICATIONS.
    - B. CONCRETE POURED-IN-PLACE FOR STRUCTURES SHALL HAVE A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF 4000 PSI, OR AS SHOWN IN THE TECHNICAL SPECIFICATIONS.
    - C. CONCRETE EXPOSED TO FREEZING TEMPERATURES IS TO HAVE 4% - 6% AIR ENTRAINMENT.
    - D. ALL EXPOSED EDGES OF CONCRETE STRUCTURES ARE TO HAVE 3/4" CHAMFERED EDGES.

REV. NO.	DATE	DRWN	CHKD	REMARKS

CRIST ENGINEERS, INC. CONSULTING ENGINEERS No. 91 — CORPORATE REGISTRATION — ARKANSAS ENGINEER

STATE OF ARKANSAS — REGISTERED PROFESSIONAL ENGINEER — No. 7996 — VANLANDINGHAM — 6/11/20

0 — 1" — 1" = 1" — THIS LINE MEASURES 1" WHEN PLOTTED FULL SIZE

DESIGNED:	KDV
DRAFTED:	RDW
CHECKED:	MDD
DATE:	JUN 2020

CRIST ENGINEERS, INC.
CONSULTING ENGINEERS
205 EXECUTIVE COURT
LITTLE ROCK, ARKANSAS 72205
TELEPHONE: (501) 664-1552
FAX: (501) 664-8579
WWW.CRISTENGINEERS.COM

GARLAND COUNTY, ARKANSAS

CITY OF HOT SPRINGS UTILITIES DEPARTMENT
LAKE OUACHITA WATER SUPPLY PROJECT

RAW WATER TRANSMISSION PIPELINE

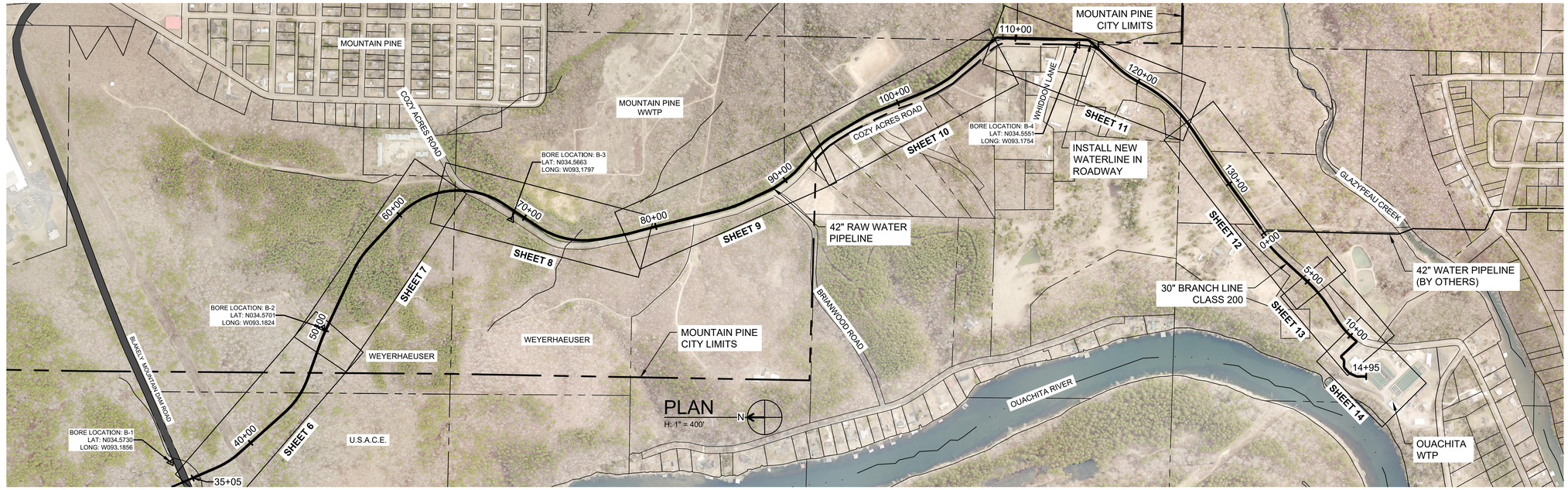
CONTRACT 1 - BLAKELY MOUNTAIN DAM RD TO OUACHITA WTP
GENERAL NOTES

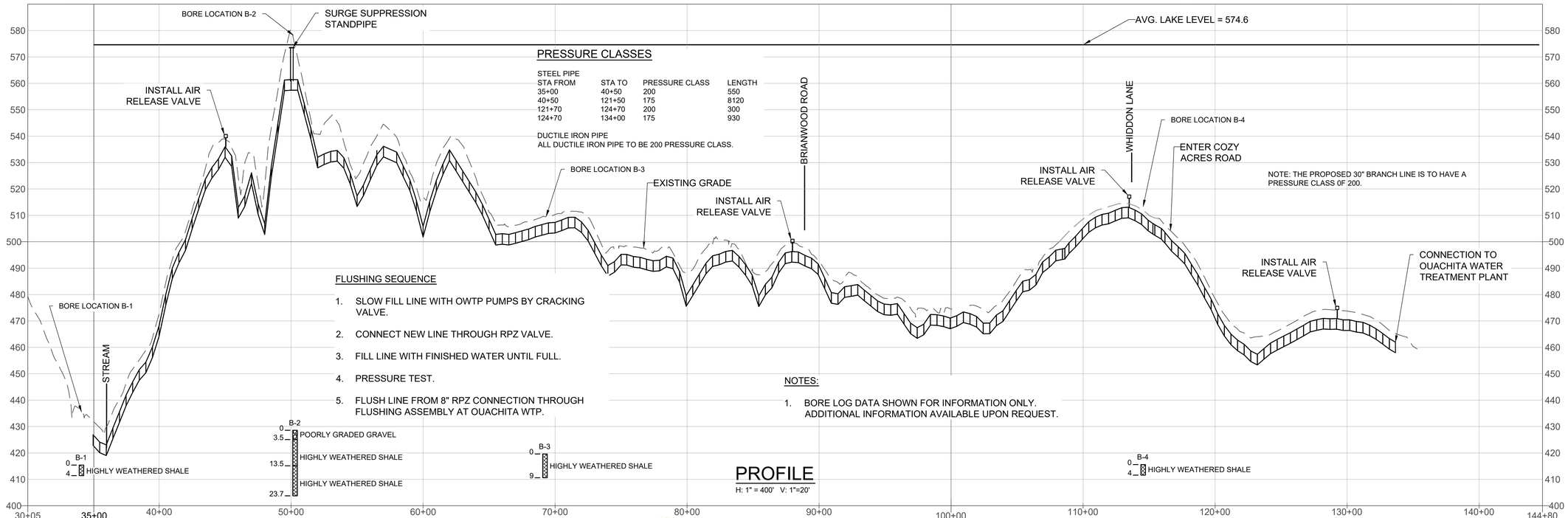
JOB NO. 1926

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PRESSURE CLASSES

STEEL PIPE

STA FROM	STA TO	PRESSURE CLASS	LENGTH
35+00	40+50	200	550
40+50	121+50	175	8120
121+70	124+70	200	300
124+70	134+00	175	930

DUCTILE IRON PIPE
ALL DUCTILE IRON PIPE TO BE 200 PRESSURE CLASS.

FLUSHING SEQUENCE

1. SLOW FILL LINE WITH OWTP PUMPS BY CRACKING VALVE.
2. CONNECT NEW LINE THROUGH RPZ VALVE.
3. FILL LINE WITH FINISHED WATER UNTIL FULL.
4. PRESSURE TEST.
5. FLUSH LINE FROM 8" RPZ CONNECTION THROUGH FLUSHING ASSEMBLY AT OUACHITA WTP.

NOTE: THE PROPOSED 30" BRANCH LINE IS TO HAVE A PRESSURE CLASS 0F 200.

NOTES:

1. BORE LOG DATA SHOWN FOR INFORMATION ONLY. ADDITIONAL INFORMATION AVAILABLE UPON REQUEST.

PROFILE

H: 1" = 400' V: 1"=20'

REV. NO.	DATE	DRWN	CHKD	REMARKS

CRIST ENGINEERS, INC. CONSULTING ENGINEERS No. 91 CORPORATE REGISTRATION ARKANSAS ENGINEER

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No.7996 KELLY D. VANLANDINGHAM 6-30-20

0 400' 1" = 400'-0" HORIZONTAL
0 20' 1" = 20'-0" VERTICAL
THIS LINE MEASURES 1" WHEN PLOTTED FULL SIZE

DESIGNED:	KDV
DRAFTED:	RDW
CHECKED:	MDD
DATE:	JUN 2020

CRIST ENGINEERS, INC.
CONSULTING ENGINEERS
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GARLAND COUNTY, ARKANSAS

CITY OF HOT SPRINGS UTILITIES DEPARTMENT
LAKE OUACHITA WATER SUPPLY PROJECT

RAW WATER TRANSMISSION PIPELINE

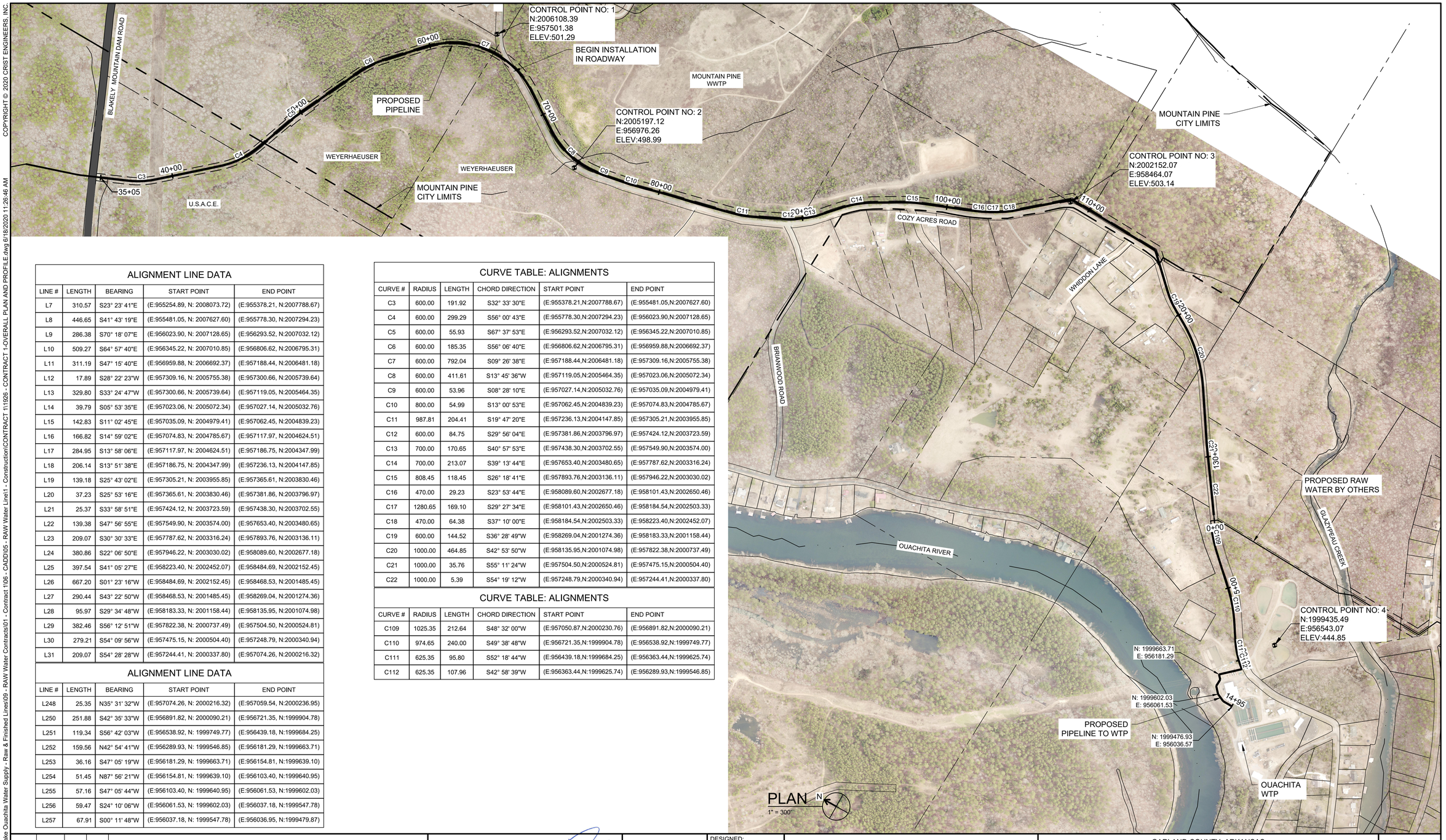
CONTRACT 1 - BLAKELY MOUNTAIN DAM RD TO OUACHITA WTP
OVERALL PLAN AND PROFILE

JOB NO. 1926

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P:\2019 Projects\1926 - CHS Lake Ouachita Water Supply - Raw & Finished Lines\09 - RAW Water Contracts\01 - Contract 1\06 - CADD\05 - RAW Water Line\1 - Construction\CONTRACT 1\1926 - CONTRACT 1-OVERALL PLAN AND PROFILE.dwg 6/18/2020 11:26:46 AM



PLAN
1" = 300'

ALIGNMENT LINE DATA

LINE #	LENGTH	BEARING	START POINT	END POINT
L7	310.57	S23° 23' 41"E	(E:955254.89, N: 2008073.72)	(E:955378.21, N:2007788.67)
L8	446.65	S41° 43' 19"E	(E:955481.05, N: 2007627.60)	(E:955778.30, N:2007294.23)
L9	286.38	S70° 18' 07"E	(E:956023.90, N: 2007128.65)	(E:956293.52, N:2007032.12)
L10	509.27	S64° 57' 40"E	(E:956345.22, N: 2007010.85)	(E:956806.62, N:2006795.31)
L11	311.19	S47° 15' 40"E	(E:956959.88, N: 2006692.37)	(E:957188.44, N:2006481.18)
L12	17.89	S28° 22' 23"W	(E:957309.16, N: 2005755.38)	(E:957300.66, N:2005739.64)
L13	329.80	S33° 24' 47"W	(E:957300.66, N: 2005739.64)	(E:957119.05, N:2005464.35)
L14	39.79	S05° 53' 35"E	(E:957023.06, N: 2005072.34)	(E:957027.14, N:2005032.76)
L15	142.83	S11° 02' 45"E	(E:957035.09, N: 2004979.41)	(E:957062.45, N:2004839.23)
L16	166.82	S14° 59' 02"E	(E:957074.83, N: 2004785.67)	(E:957117.97, N:2004624.51)
L17	284.95	S13° 58' 06"E	(E:957117.97, N: 2004624.51)	(E:957186.75, N:2004347.99)
L18	206.14	S13° 51' 38"E	(E:957186.75, N: 2004347.99)	(E:957236.13, N:2004147.85)
L19	139.18	S25° 43' 02"E	(E:957305.21, N: 2003955.85)	(E:957365.61, N:2003830.46)
L20	37.23	S25° 53' 16"E	(E:957365.61, N: 2003830.46)	(E:957381.86, N:2003796.97)
L21	25.37	S33° 58' 51"E	(E:957424.12, N: 2003723.59)	(E:957438.30, N:2003702.55)
L22	139.38	S47° 56' 55"E	(E:957549.90, N: 2003574.00)	(E:957653.40, N:2003480.65)
L23	209.07	S30° 30' 33"E	(E:957787.62, N: 2003316.24)	(E:957893.76, N:2003136.11)
L24	380.86	S22° 06' 50"E	(E:957946.22, N: 2003030.02)	(E:958089.60, N:2002677.18)
L25	397.54	S41° 05' 27"E	(E:958223.40, N: 2002452.07)	(E:958484.69, N:2002152.45)
L26	667.20	S01° 23' 16"W	(E:958484.69, N: 2002152.45)	(E:958468.53, N:2001485.45)
L27	290.44	S43° 22' 50"W	(E:958468.53, N: 2001485.45)	(E:958269.04, N:2001274.36)
L28	95.97	S29° 34' 48"W	(E:958183.33, N: 2001158.44)	(E:958135.95, N:2001074.98)
L29	382.46	S56° 12' 51"W	(E:957822.38, N: 2000737.49)	(E:957504.50, N:2000524.81)
L30	279.21	S54° 09' 56"W	(E:957475.15, N: 2000504.40)	(E:957248.79, N:2000340.94)
L31	209.07	S54° 28' 28"W	(E:957244.41, N: 2000337.80)	(E:957074.26, N:2000216.32)

ALIGNMENT LINE DATA

LINE #	LENGTH	BEARING	START POINT	END POINT
L248	25.35	N35° 31' 32"W	(E:957074.26, N: 2000216.32)	(E:957059.54, N:2000236.95)
L250	251.88	S42° 35' 33"W	(E:956891.82, N: 2000090.21)	(E:956721.35, N:1999904.78)
L251	119.34	S56° 42' 03"W	(E:956538.92, N: 1999749.77)	(E:956439.18, N:1999684.25)
L252	159.56	N42° 54' 41"W	(E:956289.93, N: 1999546.85)	(E:956181.29, N:1999663.71)
L253	36.16	S47° 05' 19"W	(E:956181.29, N: 1999663.71)	(E:956154.81, N:1999639.10)
L254	51.45	N87° 56' 21"W	(E:956154.81, N: 1999639.10)	(E:956103.40, N:1999640.95)
L255	57.16	S47° 05' 44"W	(E:956103.40, N: 1999640.95)	(E:956061.53, N:1999602.03)
L256	59.47	S24° 10' 06"W	(E:956061.53, N: 1999602.03)	(E:956037.18, N:1999547.78)
L257	67.91	S00° 11' 48"W	(E:956037.18, N: 1999547.78)	(E:956036.95, N:1999479.87)

CURVE TABLE: ALIGNMENTS

CURVE #	RADIUS	LENGTH	CHORD DIRECTION	START POINT	END POINT
C3	600.00	191.92	S32° 33' 30"E	(E:955378.21,N:2007788.67)	(E:955481.05,N:2007627.60)
C4	600.00	299.29	S56° 00' 43"E	(E:955778.30,N:2007294.23)	(E:956023.90,N:2007128.65)
C5	600.00	55.93	S67° 37' 53"E	(E:956293.52,N:2007032.12)	(E:956345.22,N:2007010.85)
C6	600.00	185.35	S56° 06' 40"E	(E:956806.62,N:2006795.31)	(E:956959.88,N:2006692.37)
C7	600.00	792.04	S09° 26' 38"E	(E:957188.44,N:2006481.18)	(E:957309.16,N:2005755.38)
C8	600.00	411.61	S13° 45' 36"W	(E:957119.05,N:2005464.35)	(E:957023.06,N:2005072.34)
C9	600.00	53.96	S08° 28' 10"E	(E:957027.14,N:2005032.76)	(E:957035.09,N:2004979.41)
C10	800.00	54.99	S13° 00' 53"E	(E:957062.45,N:2004839.23)	(E:957074.83,N:2004785.67)
C11	987.81	204.41	S19° 47' 20"E	(E:957236.13,N:2004147.85)	(E:957305.21,N:2003955.85)
C12	600.00	84.75	S29° 56' 04"E	(E:957381.86,N:2003796.97)	(E:957424.12,N:2003723.59)
C13	700.00	170.65	S40° 57' 53"E	(E:957438.30,N:2003702.55)	(E:957549.90,N:2003574.00)
C14	700.00	213.07	S39° 13' 44"E	(E:957653.40,N:2003480.65)	(E:957787.62,N:2003316.24)
C15	808.45	118.45	S26° 18' 41"E	(E:957893.76,N:2003136.11)	(E:957946.22,N:2003030.02)
C16	470.00	29.23	S23° 53' 44"E	(E:958089.60,N:2002677.18)	(E:958101.43,N:2002650.46)
C17	1280.65	169.10	S29° 27' 34"E	(E:958101.43,N:2002650.46)	(E:958184.54,N:2002503.33)
C18	470.00	64.38	S37° 10' 00"E	(E:958184.54,N:2002503.33)	(E:958223.40,N:2002452.07)
C19	600.00	144.52	S36° 28' 49"W	(E:958269.04,N:2001274.36)	(E:958183.33,N:2001158.44)
C20	1000.00	464.85	S42° 53' 50"W	(E:958135.95,N:2001074.98)	(E:957822.38,N:2000737.49)
C21	1000.00	35.76	S55° 11' 24"W	(E:957504.50,N:2000524.81)	(E:957475.15,N:2000504.40)
C22	1000.00	5.39	S54° 19' 12"W	(E:957248.79,N:2000340.94)	(E:957244.41,N:2000337.80)

CURVE TABLE: ALIGNMENTS

CURVE #	RADIUS	LENGTH	CHORD DIRECTION	START POINT	END POINT
C109	1025.35	212.64	S48° 32' 00"W	(E:957050.87,N:2000230.76)	(E:956891.82,N:2000090.21)
C110	974.65	240.00	S49° 38' 48"W	(E:956721.35,N:1999904.78)	(E:956538.92,N:1999749.77)
C111	625.35	95.80	S52° 18' 44"W	(E:956439.18,N:1999684.25)	(E:956363.44,N:1999625.74)
C112	625.35	107.96	S42° 58' 39"W	(E:956363.44,N:1999625.74)	(E:956289.93,N:1999546.85)

REV. NO.	DATE	DRWN	CHKD	REMARKS

CORPORATE REGISTRATION — CRIST ENGINEERS, INC. CONSULTING ENGINEERS No. 91 — ARKANSAS ENGINEER

STATE OF ARKANSAS — REGISTERED PROFESSIONAL ENGINEER — No.7996 — KELLY D VANLANDINGHAM — 6/18/20

0 300'
1" = 300'-0"
THIS LINE MEASURES 1" WHEN PLOTTED FULL SIZE

DESIGNED:	KDV
DRAFTED:	RDW
CHECKED:	MDD
DATE:	JUN 2020

CRIST ENGINEERS, INC.
CONSULTING ENGINEERS
205 EXECUTIVE COURT
LITTLE ROCK, ARKANSAS 72205
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GARLAND COUNTY, ARKANSAS

CITY OF HOT SPRINGS UTILITIES DEPARTMENT
LAKE OUACHITA WATER SUPPLY PROJECT

RAW WATER TRANSMISSION PIPELINE

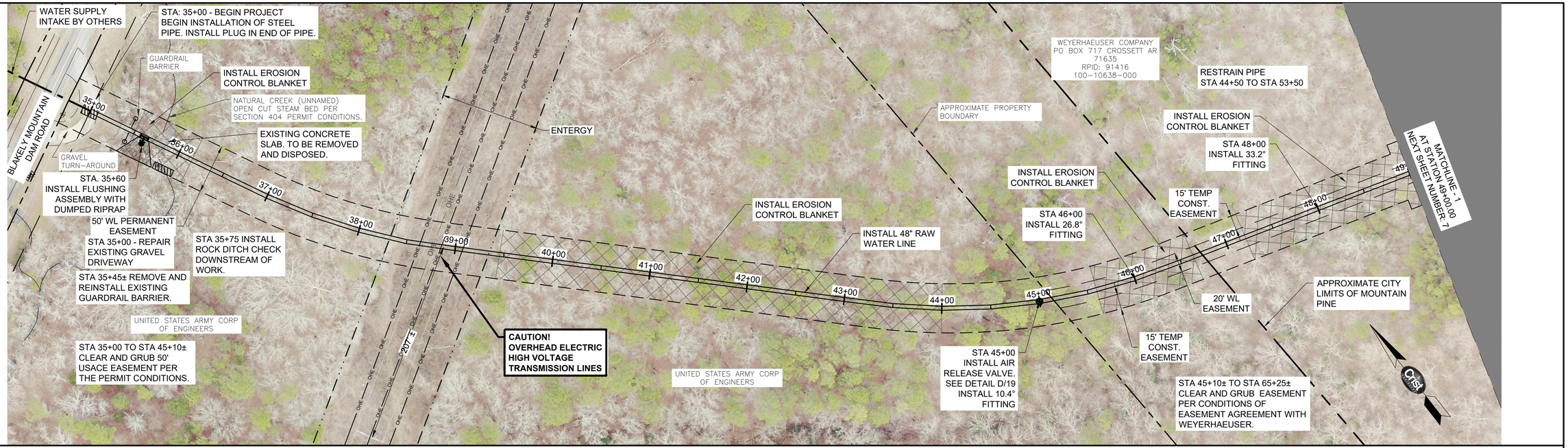
CONTRACT 1 - BLAKELY MOUNTAIN DAM RD TO OUACHITA WTP
SURVEY CONTROL LAYOUT

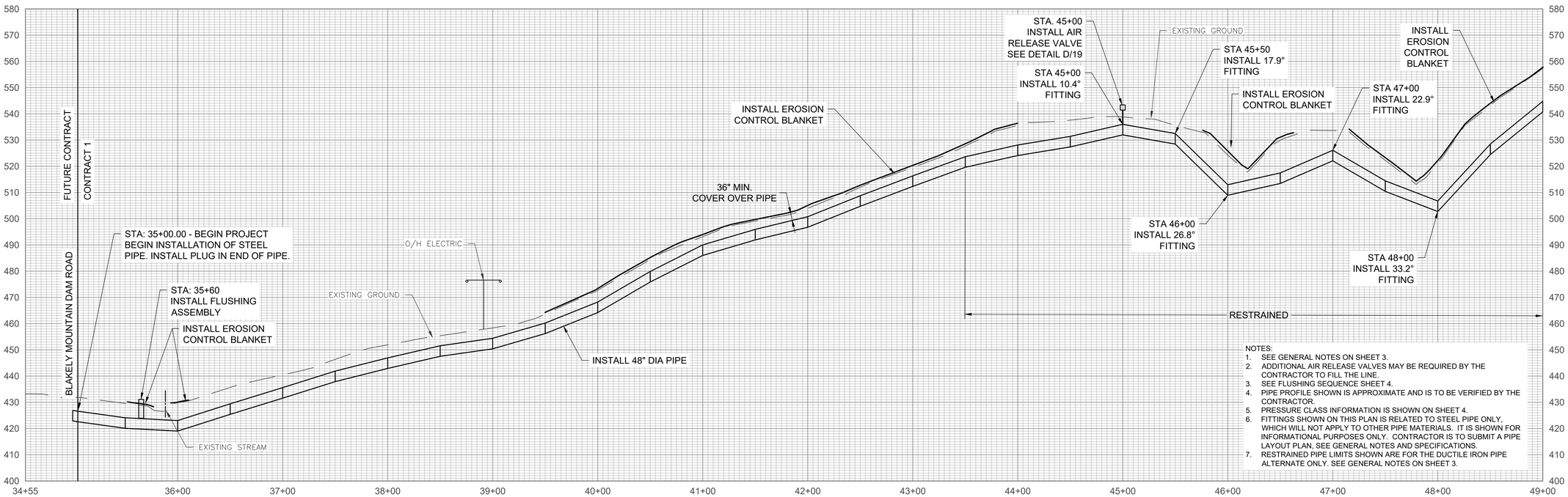
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NOTES:
1. SEE GENERAL NOTES ON SHEET 3.
2. ADDITIONAL AIR RELEASE VALVES MAY BE REQUIRED BY THE CONTRACTOR TO FILL THE LINE.
3. SEE FLUSHING SEQUENCE SHEET 4.
4. PIPE PROFILE SHOWN IS APPROXIMATE AND IS TO BE VERIFIED BY THE CONTRACTOR.
5. PRESSURE CLASS INFORMATION IS SHOWN ON SHEET 4.
6. FITTINGS SHOWN ON THIS PLAN IS RELATED TO STEEL PIPE ONLY, WHICH WILL NOT APPLY TO OTHER PIPE MATERIALS. IT IS SHOWN FOR INFORMATIONAL PURPOSES ONLY. CONTRACTOR IS TO SUBMIT A PIPE LAYOUT PLAN, SEE GENERAL NOTES AND SPECIFICATIONS.
7. RESTRAINED PIPE LIMITS SHOWN ARE FOR THE DUCTILE IRON PIPE ALTERNATE ONLY. SEE GENERAL NOTES ON SHEET 3.

REV. NO.	DATE	DRWN	CHKD	REMARKS

CRIST ENGINEERS, INC. CONSULTING ENGINEERS No. 91 CORPORATE REGISTRATION ARKANSAS ENGINEER

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No.7996 KELLY D. VANLANDINGHAM 6/30/20

0 20' 1" = 20'-0" (VERT)
0 50' 1" = 50'-0" (HORIZ)
THIS LINE MEASURES 1" WHEN PLOTTED FULL SIZE

DESIGNED: KDV
DRAFTED: RDW
CHECKED: MDD
DATE: JUN 2020

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CONSULTING ENGINEERS
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WWW.CRISTENGINEERS.COM

GARLAND COUNTY, ARKANSAS

CITY OF HOT SPRINGS UTILITIES DEPARTMENT LAKE OUACHITA WATER SUPPLY PROJECT

RAW WATER TRANSMISSION PIPELINE

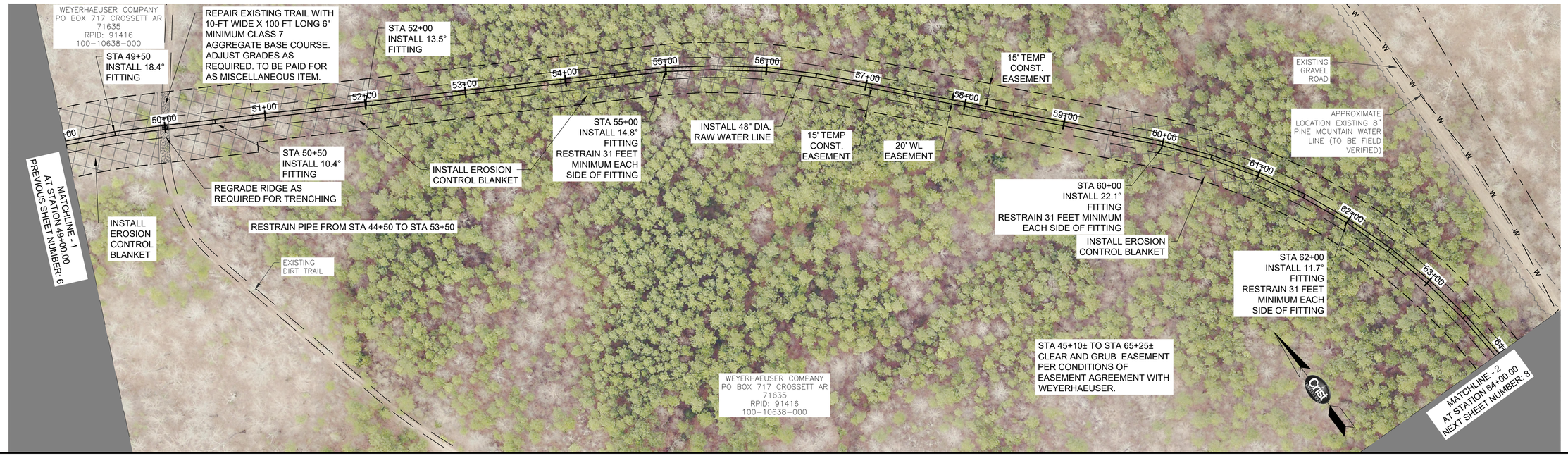
CONTRACT 1 - BLAKELY MOUNTAIN DAM RD TO OUACHITA WTP
PLAN AND PROFILE STA 35+00 TO 49+00

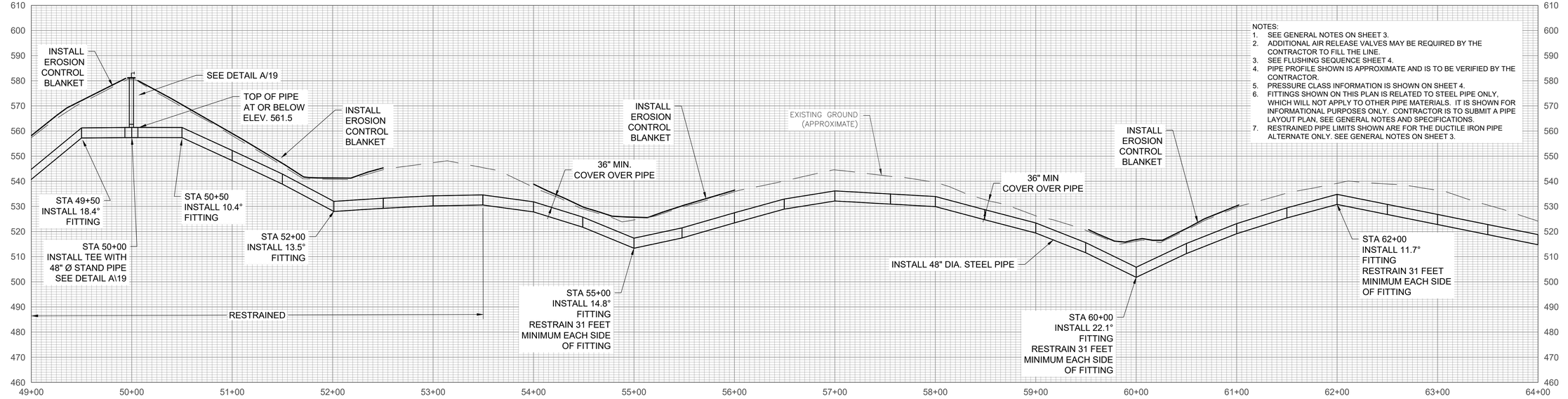
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REV. NO.	DATE	DRWN	CHKD	REMARKS

CRIST ENGINEERS, INC. CONSULTING ENGINEERS No. 91 ARKANSAS ENGINEER
CORPORATE REGISTRATION

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No.7996 MATTHEW D. VANLANDINGHAM
6/19/20

0 20' 1" = 20'-0" (VERT)
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THIS LINE MEASURES 1" WHEN PLOTTED FULL SIZE

DESIGNED: KDV
DRAFTED: RDW
CHECKED: MDD
DATE: JUN 2020

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CONSULTING ENGINEERS
205 EXECUTIVE COURT
LITTLE ROCK, ARKANSAS 72205
TELEPHONE: (501) 664-1552
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GARLAND COUNTY, ARKANSAS

CITY OF HOT SPRINGS UTILITIES DEPARTMENT
LAKE OUACHITA WATER SUPPLY PROJECT

RAW WATER TRANSMISSION PIPELINE

CONTRACT 1 - BLAKELY MOUNTAIN DAM RD TO OUACHITA WTP

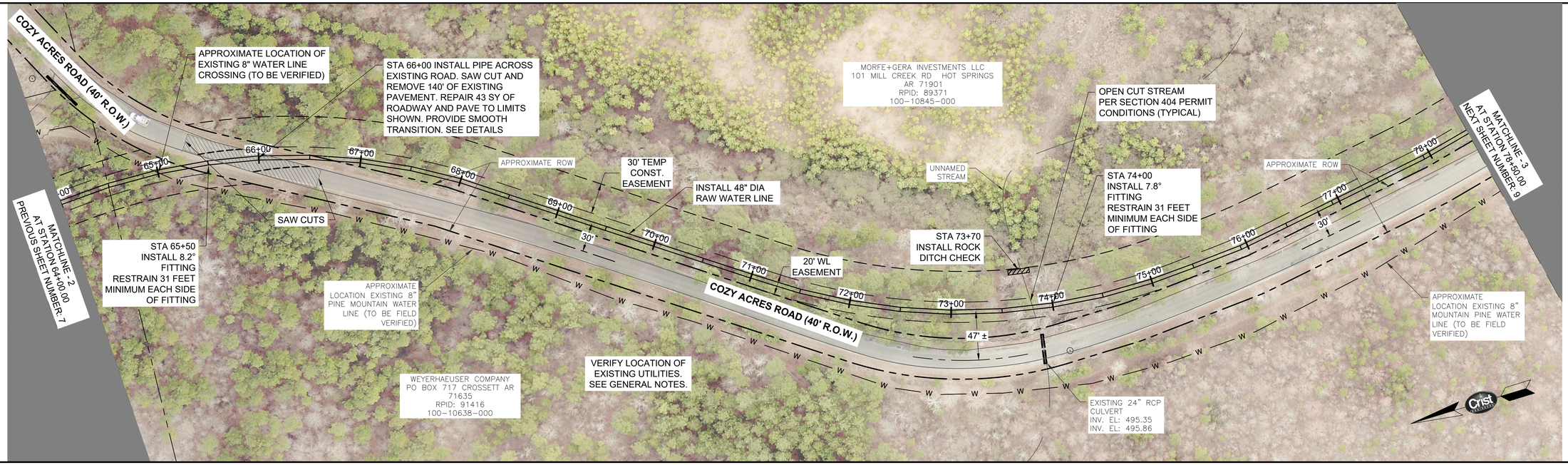
PLAN AND PROFILE STA 49+00 TO 64+00

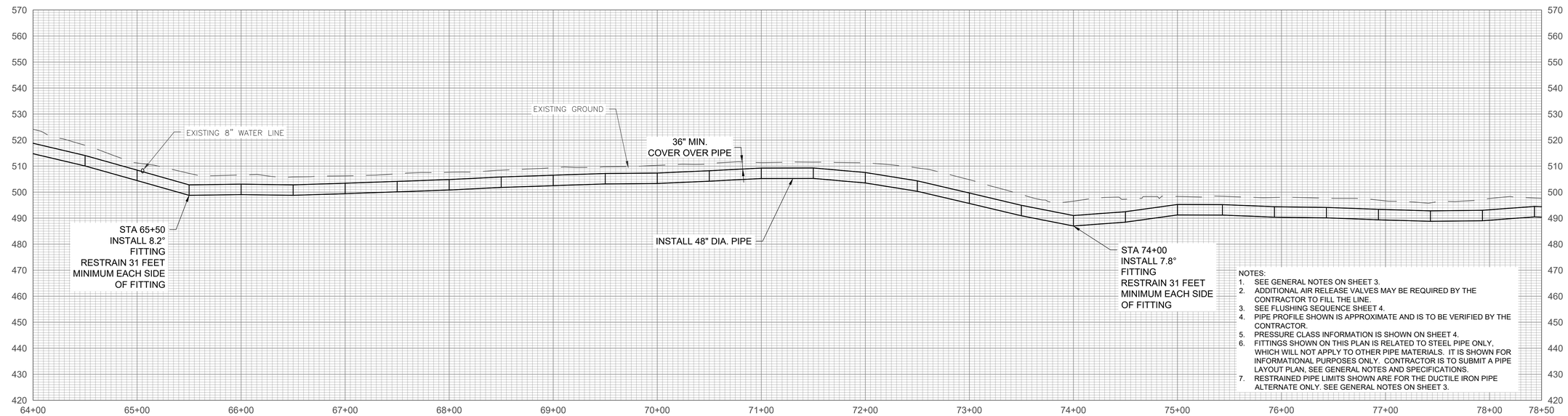
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NOTES:
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REV. NO.	DATE	DRWN	CHKD	REMARKS

CRIST ENGINEERS, INC. CONSULTING ENGINEERS No. 91 ARKANSAS ENGINEER
CORPORATE REGISTRATION

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No.7996 MATTHEW D. VANLANDINGHAM 6/24/20

0 20' 1" = 20'-0" (VERT)
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THIS LINE MEASURES 1" WHEN PLOTTED FULL SIZE

DESIGNED: KDV
DRAFTED: RDW
CHECKED: MDD
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GARLAND COUNTY, ARKANSAS

CITY OF HOT SPRINGS UTILITIES DEPARTMENT
LAKE OUACHITA WATER SUPPLY PROJECT

RAW WATER TRANSMISSION PIPELINE

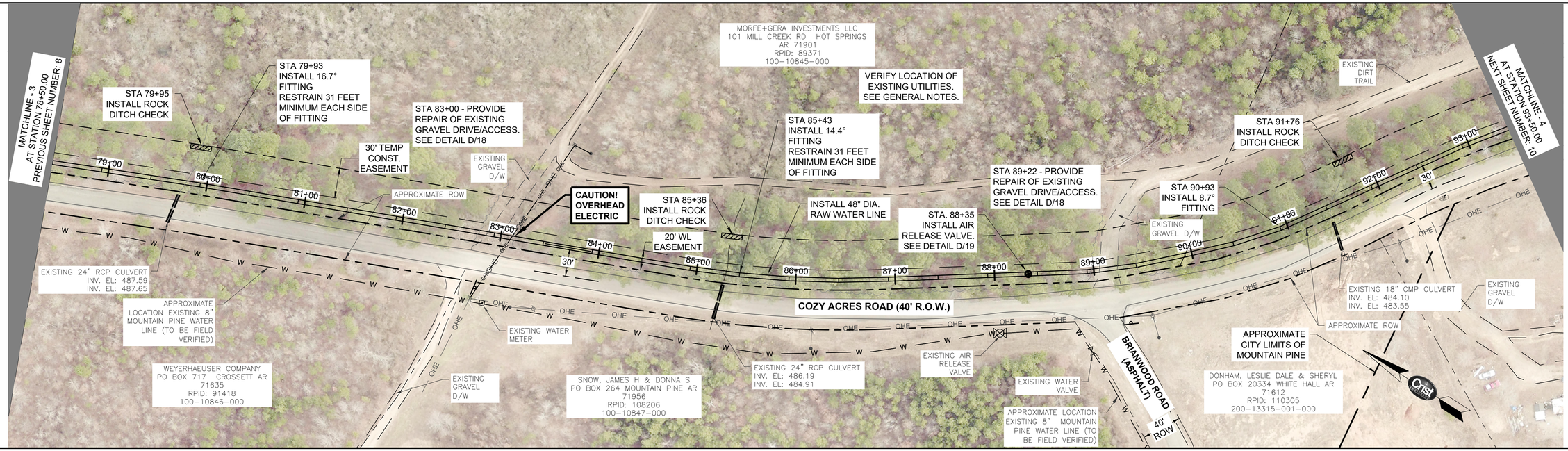
CONTRACT 1 - BLAKELY MOUNTAIN DAM RD TO OUACHITA WTP
PLAN AND PROFILE STA 64+00 TO 78+50

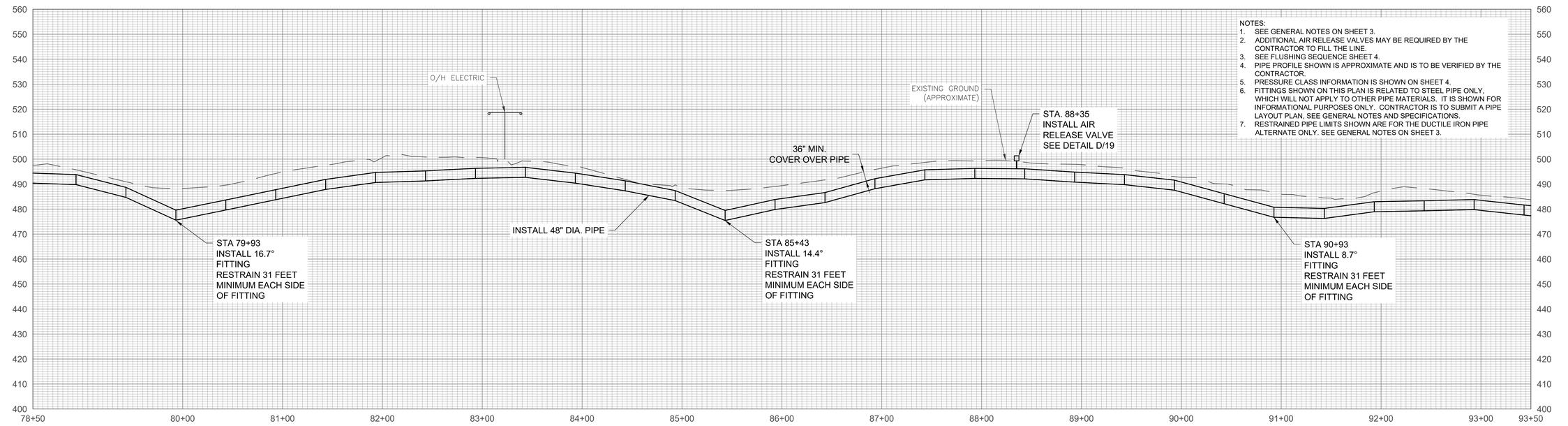
JOB NO. 1926

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NOTES:
1. SEE GENERAL NOTES ON SHEET 3.
2. ADDITIONAL AIR RELEASE VALVES MAY BE REQUIRED BY THE CONTRACTOR TO FILL THE LINE.
3. SEE FLUSHING SEQUENCE SHEET 4.
4. PIPE PROFILE SHOWN IS APPROXIMATE AND IS TO BE VERIFIED BY THE CONTRACTOR.
5. PRESSURE CLASS INFORMATION IS SHOWN ON SHEET 4.
6. FITTINGS SHOWN ON THIS PLAN IS RELATED TO STEEL PIPE ONLY, WHICH WILL NOT APPLY TO OTHER PIPE MATERIALS. IT IS SHOWN FOR INFORMATIONAL PURPOSES ONLY. CONTRACTOR IS TO SUBMIT A PIPE LAYOUT PLAN, SEE GENERAL NOTES AND SPECIFICATIONS.
7. RESTRAINED PIPE LIMITS SHOWN ARE FOR THE DUCTILE IRON PIPE ALTERNATE ONLY. SEE GENERAL NOTES ON SHEET 3.

REV. NO.	DATE	DRWN	CHKD	REMARKS

CRIST ENGINEERS, INC. CONSULTING ENGINEERS No. 91 CORPORATE REGISTRATION ARKANSAS ENGINEER

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 7996 KELLY D. VANLANDINGHAM 6/19/20

1" = 20'-0" (VERT)
1" = 50'-0" (HORIZ)
THIS LINE MEASURES 1" WHEN PLOTTED FULL SIZE

DESIGNED: KDV
DRAFTED: RDW
CHECKED: MDD
DATE: JUN 2020

CRIST ENGINEERS, INC.
CONSULTING ENGINEERS
205 EXECUTIVE COURT
LITTLE ROCK, ARKANSAS 72205
TELEPHONE: (501) 664-1552
FAX: (501) 664-8579
WWW.CRISTENGINEERS.COM

GARLAND COUNTY, ARKANSAS

CITY OF HOT SPRINGS UTILITIES DEPARTMENT
LAKE OUACHITA WATER SUPPLY PROJECT

RAW WATER TRANSMISSION PIPELINE

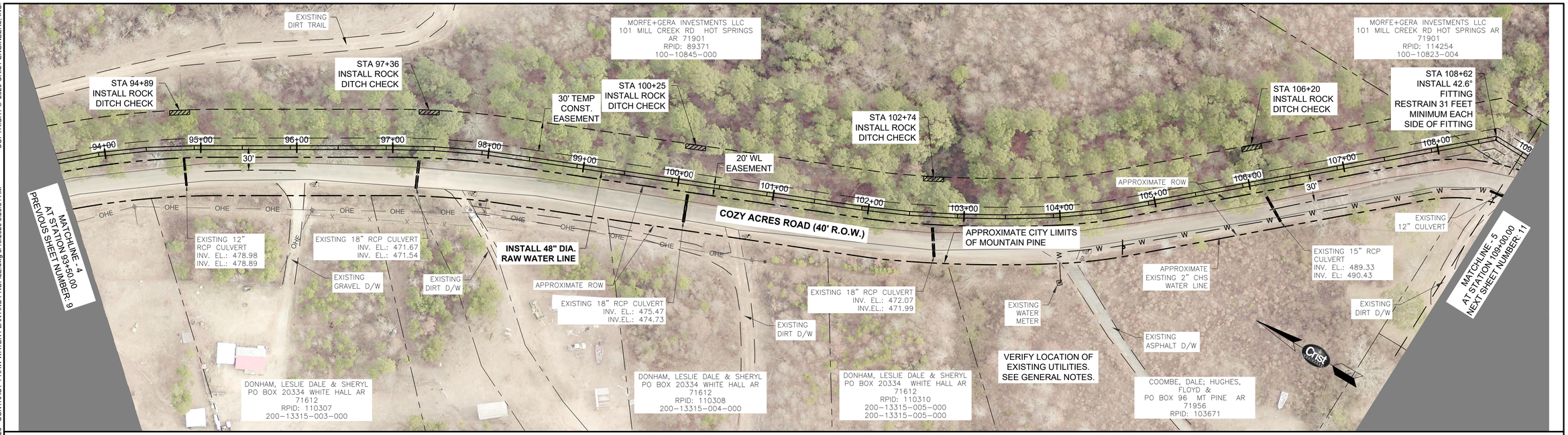
CONTRACT 1 - BLAKELY MOUNTAIN DAM RD TO OUACHITA WTP
PLAN AND PROFILE STA 78+50 TO 93+50

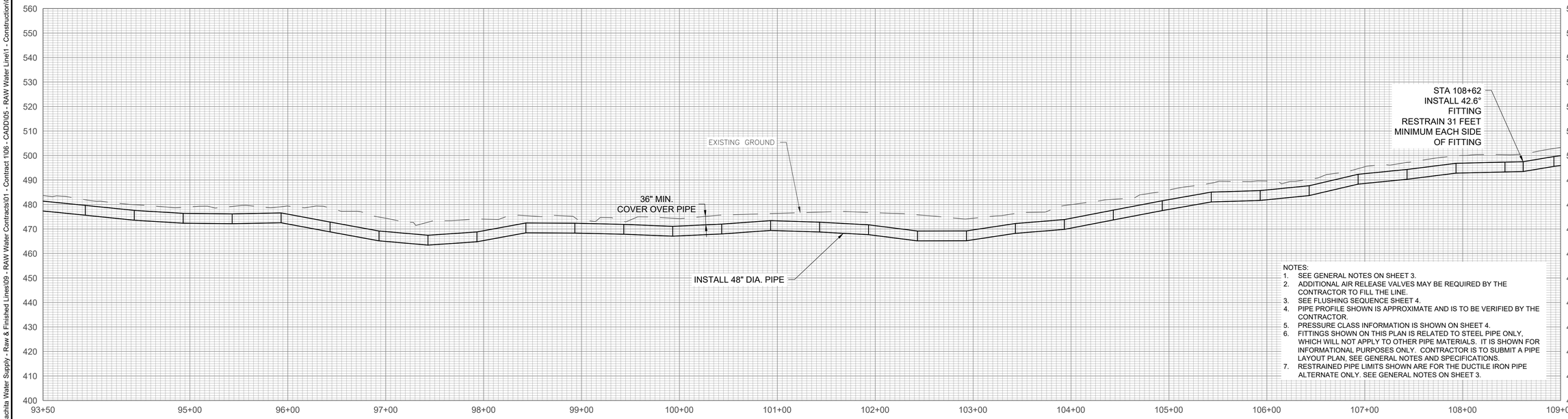
JOB NO. 1926

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NOTES:
1. SEE GENERAL NOTES ON SHEET 3.
2. ADDITIONAL AIR RELEASE VALVES MAY BE REQUIRED BY THE CONTRACTOR TO FILL THE LINE.
3. SEE FLUSHING SEQUENCE SHEET 4.
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7. RESTRAINED PIPE LIMITS SHOWN ARE FOR THE DUCTILE IRON PIPE ALTERNATE ONLY. SEE GENERAL NOTES ON SHEET 3.

REV. NO.	DATE	DRWN	CHKD	REMARKS

CRIST ENGINEERS, INC. CONSULTING ENGINEERS No. 91 — CORPORATE REGISTRATION — ARKANSAS ENGINEER

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No.7996 KELLY D. VANLANDINGHAM 6/19/20

0 20' 1" = 20'-0" (VERT)
0 50' 1" = 50'-0" (HORIZ)
0 1" 1" = 1"
THIS LINE MEASURES 1" WHEN PLOTTED FULL SIZE

DESIGNED:	KDV
DRAFTED:	RDW
CHECKED:	MDD
DATE:	JUN 2020

CRIST ENGINEERS, INC.
CONSULTING ENGINEERS
205 EXECUTIVE COURT
LITTLE ROCK, ARKANSAS 72205
TELEPHONE: (501) 664-1552
FAX: (501) 664-8579
WWW.CRISTENGINEERS.COM

GARLAND COUNTY, ARKANSAS

CITY OF HOT SPRINGS UTILITIES DEPARTMENT LAKE OUACHITA WATER SUPPLY PROJECT

RAW WATER TRANSMISSION PIPELINE

CONTRACT 1 - BLAKELY MOUNTAIN DAM RD TO OUACHITA WTP

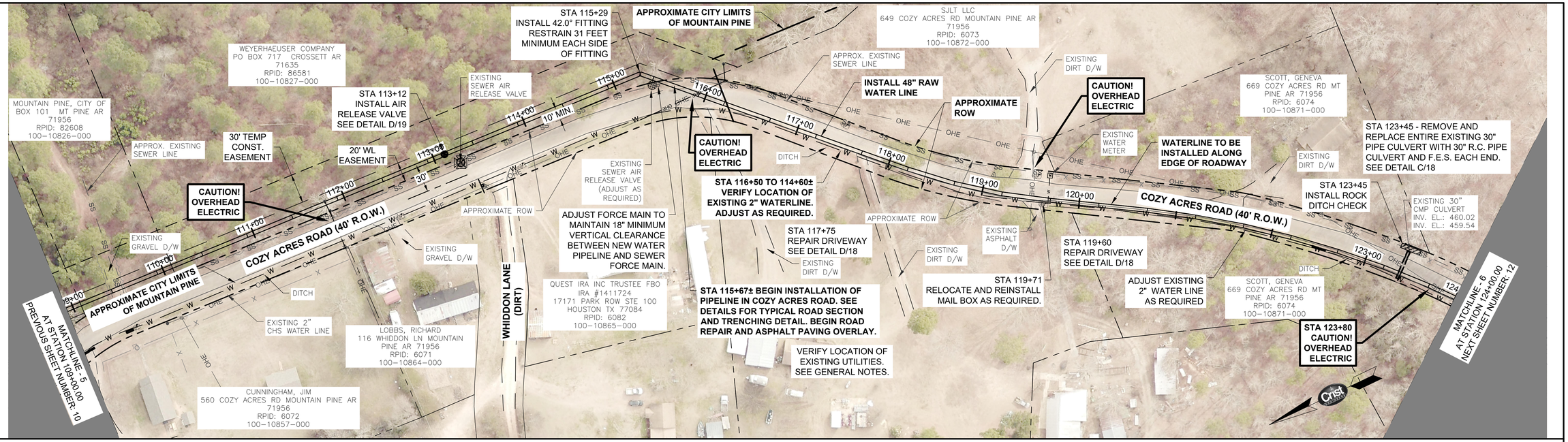
PLAN AND PROFILE STA 93+50 TO 109+00

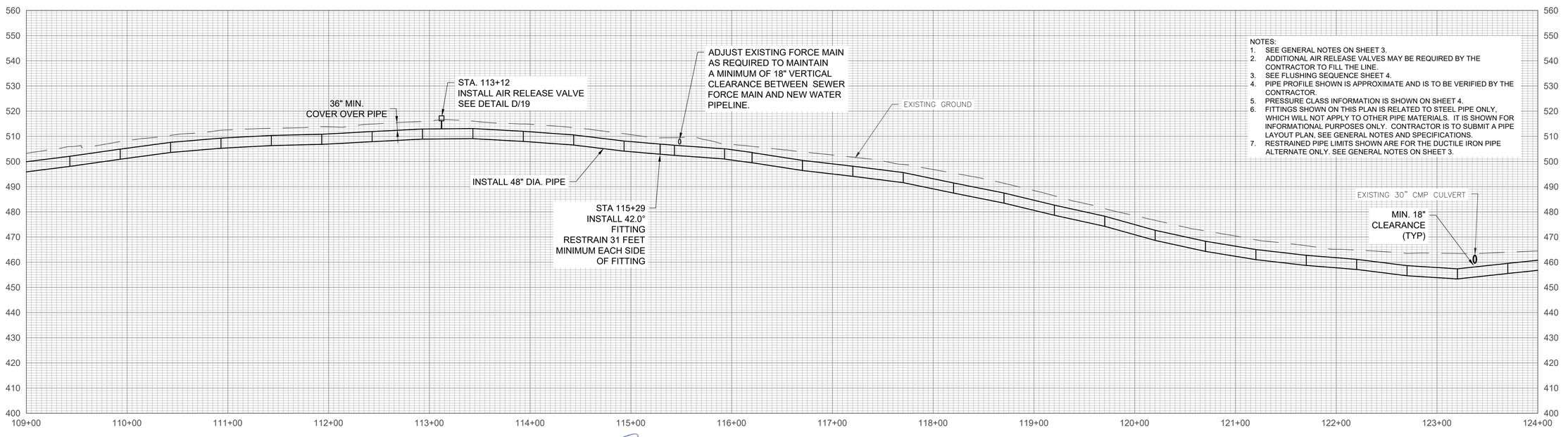
JOB NO. 1926

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REV. NO.	DATE	DRWN	CHKD	REMARKS

CRIST ENGINEERS, INC. CONSULTING ENGINEERS No. 91 CORPORATE REGISTRATION ARKANSAS ENGINEER

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 7996 MARK D. VANLANDINGHAM

6/19/20

1" = 20'-0" (VERT)
1" = 50'-0" (HORIZ)
THIS LINE MEASURES 1" WHEN PLOTTED FULL SIZE

DESIGNED:	KDV
DRAFTED:	RDW
CHECKED:	MDD
DATE:	JUN 2020

CRIST ENGINEERS, INC.
CONSULTING ENGINEERS
205 EXECUTIVE COURT
LITTLE ROCK, ARKANSAS 72205
TELEPHONE: (501) 664-1552
FAX: (501) 664-8579
WWW.CRISTENGINEERS.COM

GARLAND COUNTY, ARKANSAS

CITY OF HOT SPRINGS UTILITIES DEPARTMENT
LAKE OUACHITA WATER SUPPLY PROJECT

RAW WATER TRANSMISSION PIPELINE

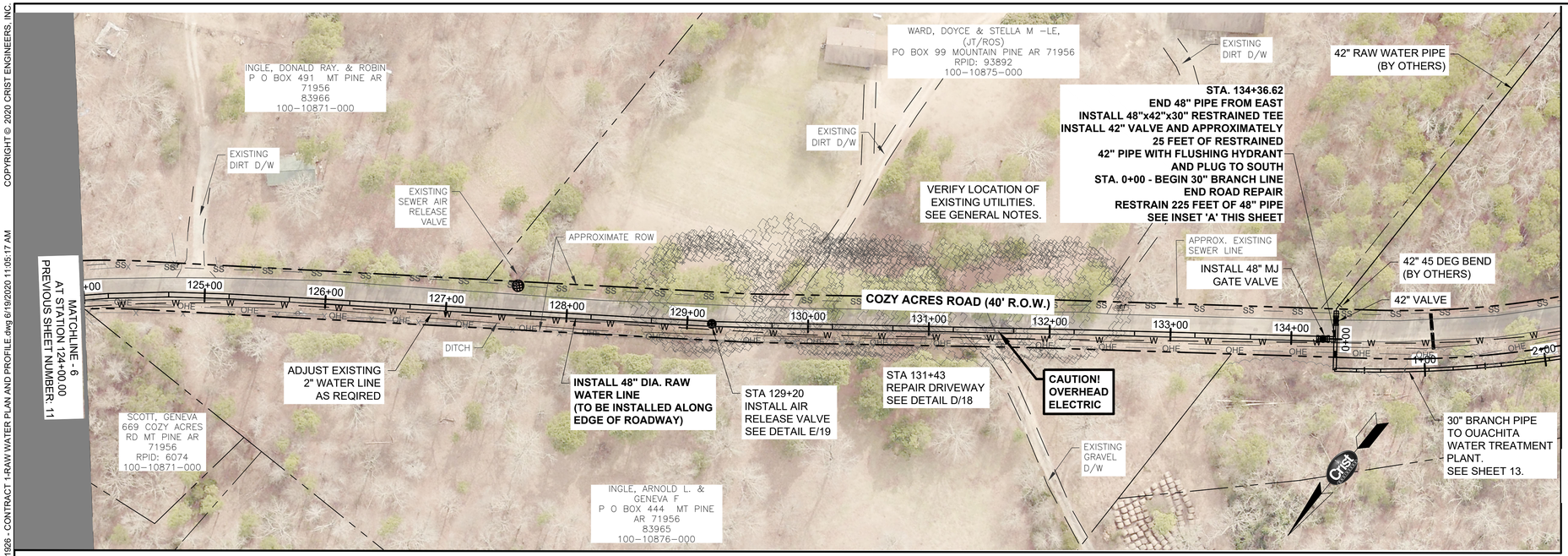
CONTRACT 1 - BLAKELY MOUNTAIN DAM RD TO OUACHITA WTP
PLAN AND PROFILE STA 109+00 TO 124+00

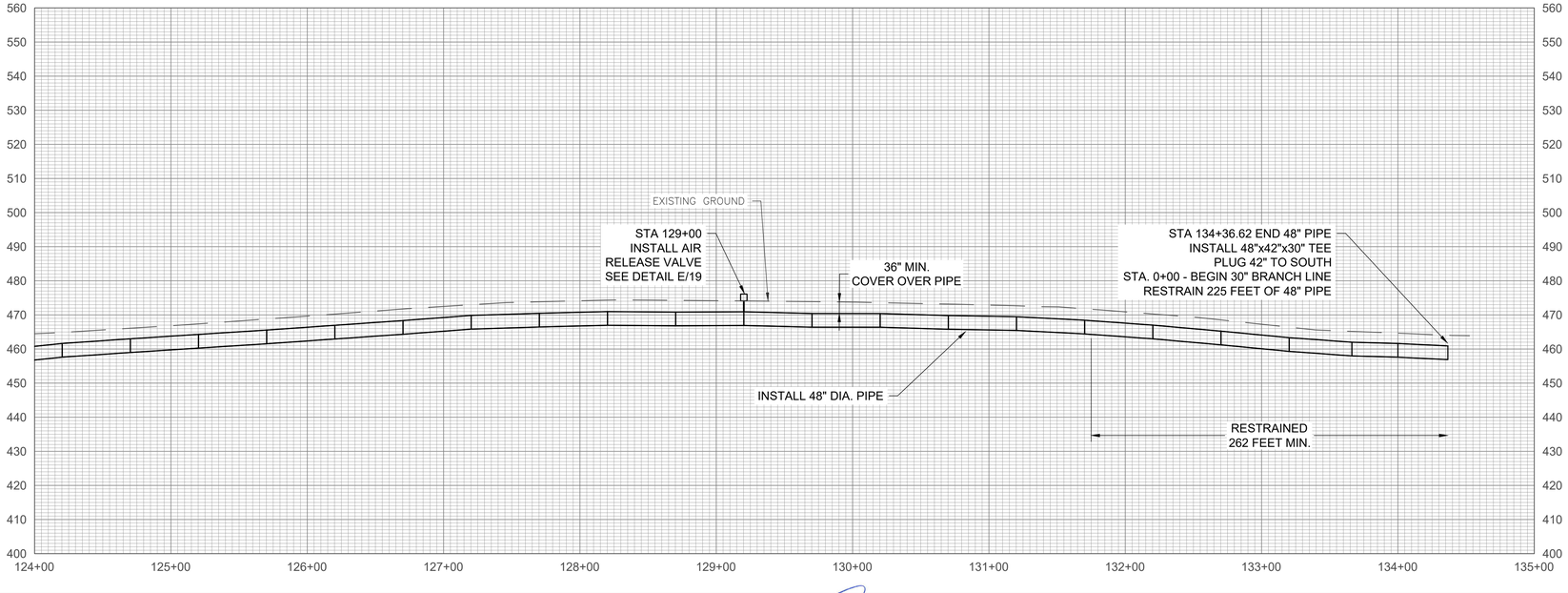
JOB NO. 1926

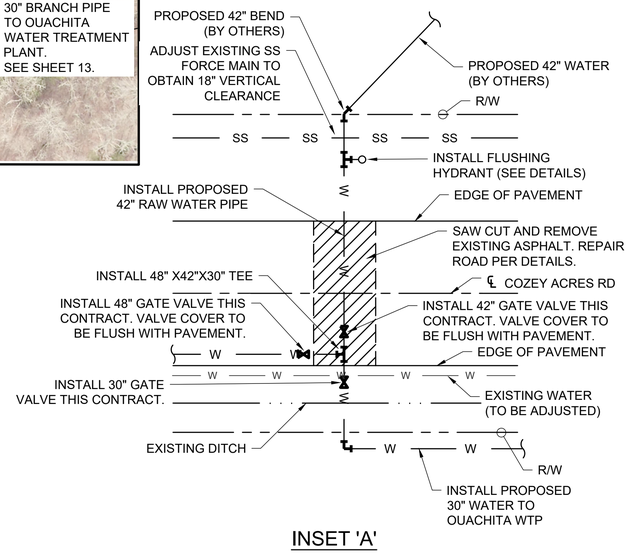
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INSET 'A'

NOTES:
1. SEE GENERAL NOTES ON SHEET 3.
2. ADDITIONAL AIR RELEASE VALVES MAY BE REQUIRED BY THE CONTRACTOR TO FILL THE LINE.
3. SEE FLUSHING SEQUENCE SHEET 4.
4. PIPE PROFILE SHOWN IS APPROXIMATE AND IS TO BE VERIFIED BY THE CONTRACTOR.
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7. RESTRAINED PIPE LIMITS SHOWN ARE FOR THE DUCTILE IRON PIPE ALTERNATE ONLY. SEE GENERAL NOTES ON SHEET 3.

REV. NO.	DATE	DRWN	CHKD	REMARKS

CRIST ENGINEERS, INC. CONSULTING ENGINEERS No. 91 — CORPORATE REGISTRATION — ARKANSAS ENGINEER

STATE OF ARKANSAS — REGISTERED PROFESSIONAL ENGINEER — No.7996 — KELLY D. VANLANDINGHAM — 6/19/20

1" = 20'-0" (VERT) 0 20'
1" = 50'-0" (HORIZ) 0 50'
1"= 1" 0 1"
THIS LINE MEASURES 1" WHEN PLOTTED FULL SIZE

DESIGNED: KDV
DRAFTED: RDW
CHECKED: MDD
DATE: JUN 2020

CRIST ENGINEERS, INC.
CONSULTING ENGINEERS
205 EXECUTIVE COURT
LITTLE ROCK, ARKANSAS 72205
TELEPHONE: (501) 664-1552
FAX: (501) 664-8579
WWW.CRISTENGINEERS.COM

GARLAND COUNTY, ARKANSAS

CITY OF HOT SPRINGS UTILITIES DEPARTMENT
LAKE OUACHITA WATER SUPPLY PROJECT

RAW WATER TRANSMISSION PIPELINE

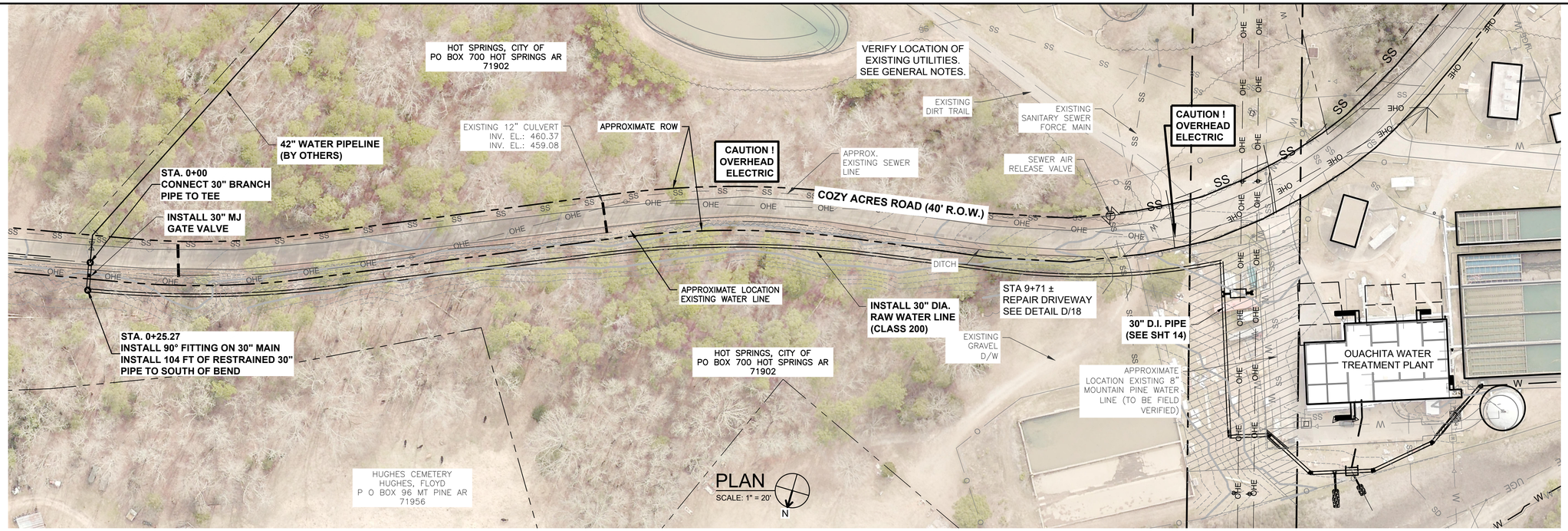
CONTRACT 1 - BLAKELY MOUNTAIN DAM RD TO OUACHITA WTP
PLAN AND PROFILE STA 124+00 TO 134+36.62

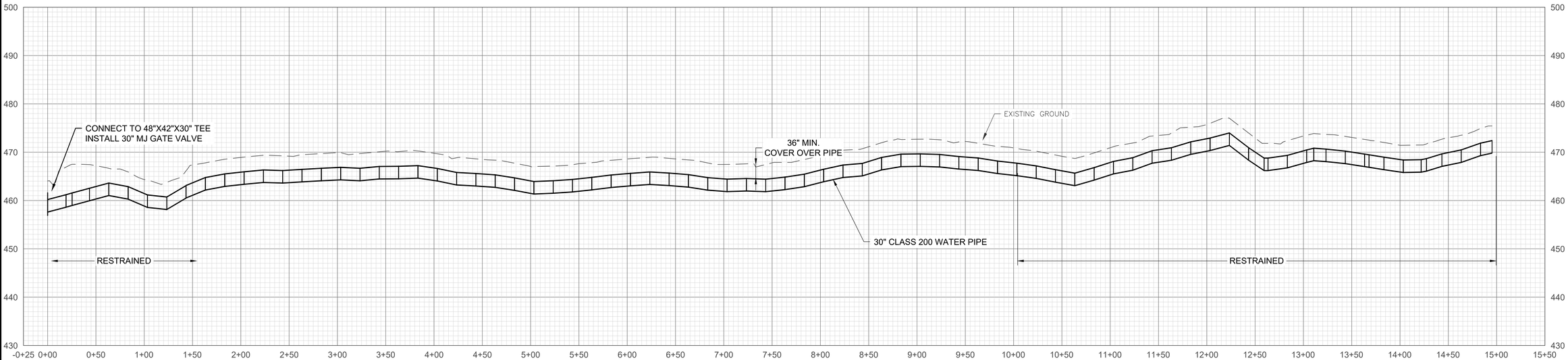
JOB NO. 1926

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REV. NO.	DATE	DRWN	CHKD	REMARKS

CORPORATE REGISTRATION
CRIST ENGINEERS, INC.
CONSULTING ENGINEERS
No. 91
ARKANSAS ENGINEER

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7396
JAY D. VANLANDINGHAM
6/24/20

0 20'
1" = 20'-0"
THIS LINE MEASURES 1"
WHEN PLOTTED FULL SIZE

DESIGNED: JK
DRAFTED: RDW
CHECKED: KVD/MDD
DATE: JUN 2020

CRIST ENGINEERS, INC.
CONSULTING ENGINEERS
205 EXECUTIVE COURT
LITTLE ROCK, ARKANSAS 72205
TELEPHONE: (501) 664-1552
FAX: (501) 664-8579
WWW.CRISTENGINEERS.COM

GARLAND COUNTY, ARKANSAS

CITY OF HOT SPRINGS UTILITIES DEPARTMENT
LAKE OUACHITA WATER SUPPLY PROJECT

RAW WATER TRANSMISSION PIPELINE

CONTRACT 1 - BLAKELY MOUNTAIN DAM RD TO OUACHITA WTP
PLAN SHEET STA 0+00 TO 14+95

JOB NO. 1926

SHEET NO. 13

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REMOVE AND REINSTALL EXISTING FENCE AS REQUIRED FOR PIPE INSTALLATION.

STA. 11+00± INSTALL 90° BEND

INSTALL 8" TAPPING SLEEVE AND VALVE ON EXISTING BACKWASH WATER LINE.

REMOVE EXISTING REDUCER AND INSTALL 45° BEND. SEE CONNECTION DETAIL A.

STA. 4+57± INSTALL 45° BEND

DEMOLISH VALVE VAULT TO BELOW GRADE AND AS REQUIRED TO INSTALL NEW LINE

STA 0+55 INSTALL 30" x 8" M.J. TEE WITH 8" TO BACKWASH LINE

NEW WATER SUPPLY CONNECTION (SEE DETAILS)

EXISTING 8" BACKWASH WATER LINE

30" D.I. WATER LINE

30" RESTRAINED DIP RAW WATER LINE (36" MIN. COVER)

CAUTION! OVERHEAD ELECTRIC LINES ABOVE

100' POWER LINE EASEMENT

STA. 2+20 TO 2+40 REPAIR PAVED AREA AS REQUIRED.

2 PVC CONDUITS FROM VAULT TO CONTROL ROOM (BY OTHERS)

STA. 3+89± INSTALL 22 ¼° BEND

ASPHALT REPAIR STA 3+97 TO 4+11

STA. 2+21± INSTALL 45° BEND

INSTALL (2) BOLLARDS

STA. 3+30± INSTALL 22 ¼° BEND

STA. 1+80± INSTALL AIR RELEASE VALVE

DUMPED RIPRAP W/ FILTER BLANKET

6" SCH 40 PVC DRAIN TO DAYLIGHT. SEE PROFILE, SHEET 15

STA. 2+73± INSTALL 45° BEND

VALVE CONTROL VAULT SEE DETAIL A/15

STA. 1+85± INSTALL 90° BEND

STA. 2+94 INSTALL FLUSHING ASSEMBLY WITH 15' OF 12" PIPE AND 45° VERTICAL BEND

DUMPED RIPRAP W/ FILTER BLANKET. PROVIDE POSTIVE DRAINAGE AROUND PUMP HOUSE. PROTECT SLOPE FROM EROSION AND SCOUR AS REQUIRED

NOTES:
1. ALL DUCTILE IRON TO BE RESTRAINED.
2. THRUST BLOCKS TO BE USED ONLY WHERE AND AS DIRECTED BY ENGINEER.
3. FLOW VALVE TO BE INSTALLED BY OTHERS. (SEE DETAILS)
4. SEE GENERAL NOTES, SHEET 3.
5. SEE FLUSHING SEQUENCE, SHEET 4.

RAPID MIX

CHEMICAL BUILDING

EXISTING 36" D.I.

EXISTING FLOW METER

EXISTING VALVE TO REMAIN

EXISTING VALVE

EXISTING 30" RAW WATER BYPASS LINE

SEDIMENT BASIN

BACKWASH TANK

FILTER BUILDING

8" PVC SEWER

BACKWASH TANK CONTROL VAULT

CONCRETE DRIVE

EXISTING CURB INLETS

36" DIP WATER LINE

2" PVC WATER LINE

LAKE HAMILTON

PUMP HOUSE

SLUDGE DRYING BEDS

COZY ACRES RD (ASPHALT)

PLAN
SCALE: 1" = 20'

REV. NO.	DATE	DRWN	CHKD	REMARKS

CRIST ENGINEERS, INC. CONSULTING ENGINEERS No. 91 — CORPORATE REGISTRATION — ARKANSAS ENGINEER

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 7996 — VANLANDINGHAM

THIS LINE MEASURES 1" WHEN PLOTTED FULL SIZE (0 — 20', 1" = 20'-0")

DESIGNED: JK
DRAFTED: RDW
CHECKED: KVD/MDD
DATE: JUN 2020

CRIST ENGINEERS, INC.
CONSULTING ENGINEERS
205 EXECUTIVE COURT
LITTLE ROCK, ARKANSAS 72205
TELEPHONE: (501) 664-1552
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WWW.CRISTENGINEERS.COM

GARLAND COUNTY, ARKANSAS

CITY OF HOT SPRINGS UTILITIES DEPARTMENT
LAKE OUACHITA WATER SUPPLY PROJECT

RAW WATER TRANSMISSION PIPELINE

CONTRACT 1 - BLAKELY MOUNTAIN DAM RD TO OUACHITA WTP
PLAN SHEET OUACHITA TREATMENT PLANT

JOB NO. 1926

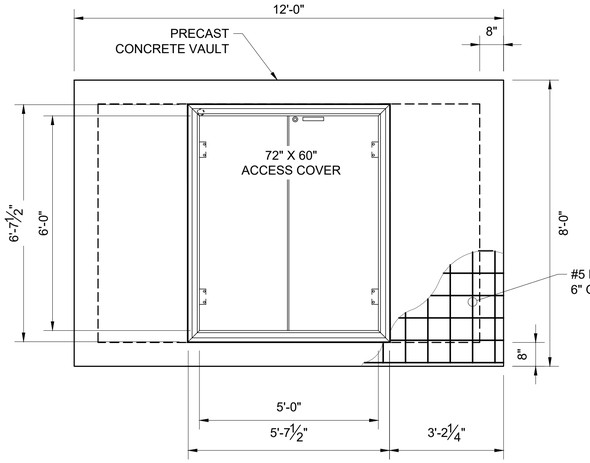
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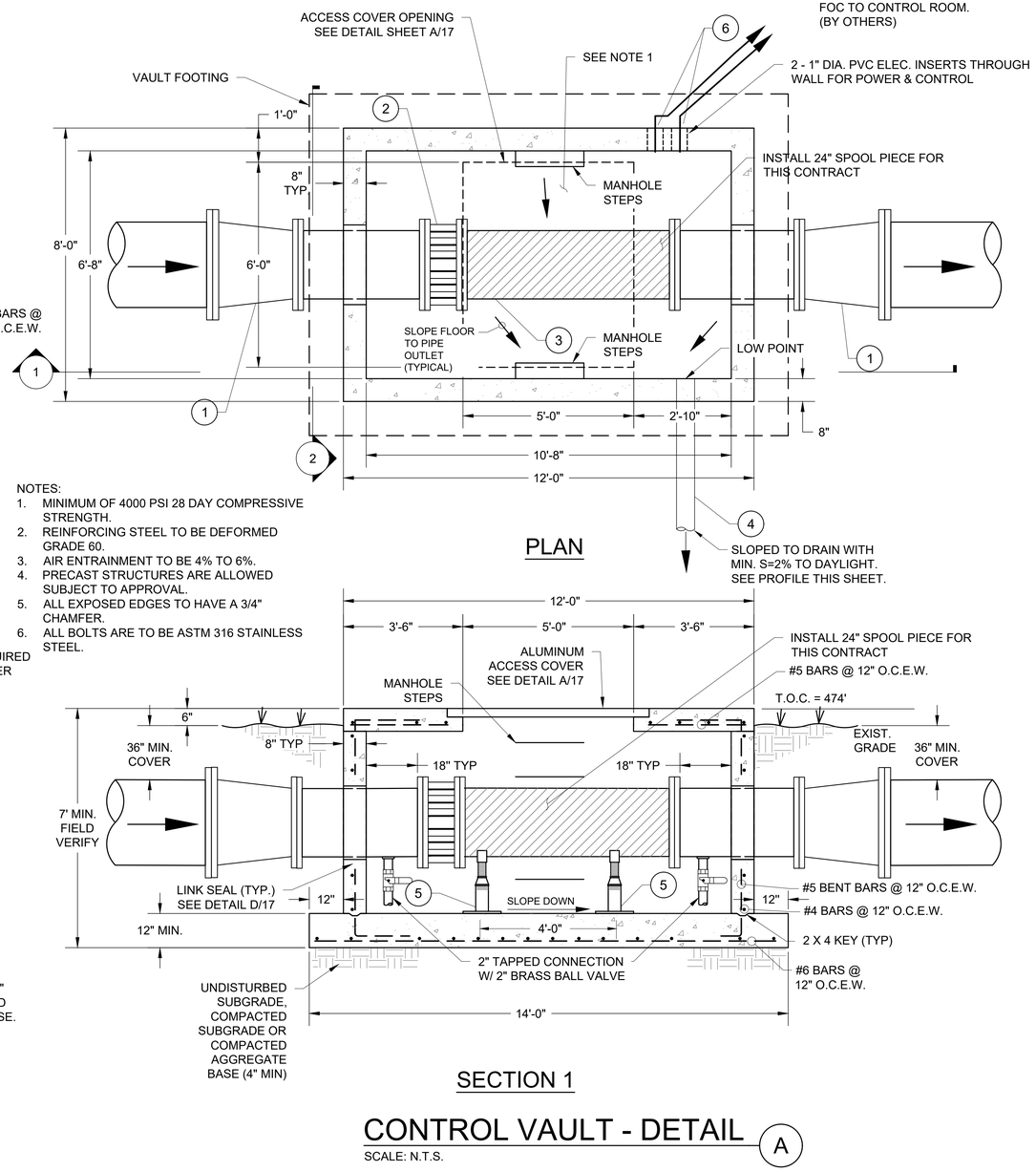
P:\2019 Projects\1926 - CHS Lake Ouachita Water Supply - Raw & Finished Lines\09 - RAW Water Contracts\01 - Contract 1\06 - CADD\05 - RAW Water Line\1 - Construction\CONTRACT 1\1926 - CONTRACT I-VALVE VAULT DETAILS.dwg 6/23/2020 9:44:01 AM

VAULT PIPING MATERIAL SCHEDULE	
TAG	DESCRIPTION
1	30 x 24 FL REDUCER
2	24" FLA, SMITH-BLAIR 971
3	24" FL X PE SPOOL PIECE
4	6" SCH 40 PVC DRAIN LINE
5	PIPE SUPPORT, SEE DETAIL B/17
6	1" DIA. PVC ELECTRICAL CONDUIT

NOTES:
1. SLOPE FLOOR TO DRAIN.
2. CONTRACTOR TO INSTALL SPOOL PIECE IN LIEU OF FLOW CONTROL VALVE.
3. INSTALL PULL STRING IN CONDUIT FROM CONTROL ROOM TO VAULT.

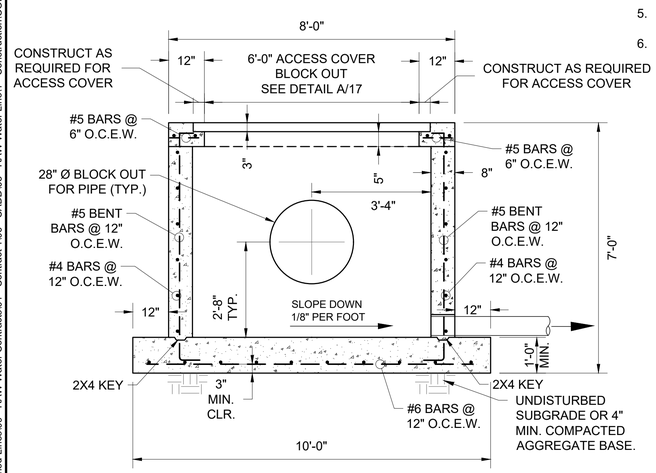


TOP



PLAN

NOTES:
1. MINIMUM OF 4000 PSI 28 DAY COMPRESSIVE STRENGTH.
2. REINFORCING STEEL TO BE DEFORMED GRADE 60.
3. AIR ENTRAINMENT TO BE 4% TO 6%.
4. PRECAST STRUCTURES ARE ALLOWED SUBJECT TO APPROVAL.
5. ALL EXPOSED EDGES TO HAVE A 3/4" CHAMFER.
6. ALL BOLTS ARE TO BE ASTM 316 STAINLESS STEEL.



SECTION 2

SECTION 1

VALVE VAULT DRAIN LINE PROFILE

SCALE: 3" = 1'-0" 1" = 10'H, 1" = 3'V

CONTROL VAULT - DETAIL A

SCALE: N.T.S.

REV. NO.	DATE	DRWN	CHKD	REMARKS

CRIST ENGINEERS, INC. CONSULTING ENGINEERS No. 91 — CORPORATE REGISTRATION — ARKANSAS ENGINEER

STATE OF ARKANSAS — REGISTERED PROFESSIONAL ENGINEER — No.7996 — KELLY D VANLANDINGHAM — 6/30/20

THIS LINE MEASURES 1" WHEN PLOTTED FULL SIZE

DESIGNED:	KDV
DRAFTED:	RDW
CHECKED:	MDD
DATE:	JUN 2020

CRIST ENGINEERS, INC.
CONSULTING ENGINEERS
205 EXECUTIVE COURT
LITTLE ROCK, ARKANSAS 72205
TELEPHONE: (501) 664-1552
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GARLAND COUNTY, ARKANSAS

CITY OF HOT SPRINGS UTILITIES DEPARTMENT
LAKE OUACHITA WATER SUPPLY PROJECT

RAW WATER TRANSMISSION PIPELINE

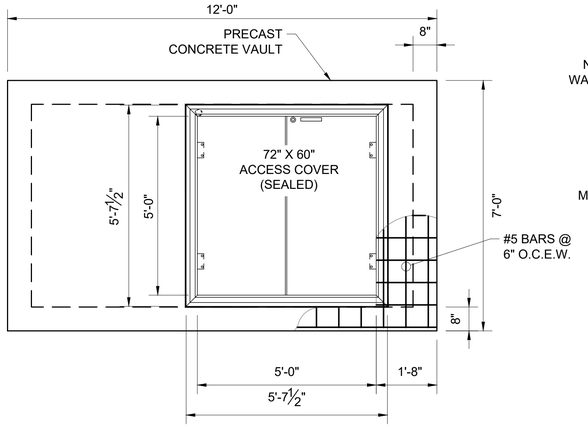
CONTRACT 1 - BLAKELY MOUNTAIN DAM RD TO OUACHITA WTP
VALVE VAULT DETAILS

JOB NO. 1926

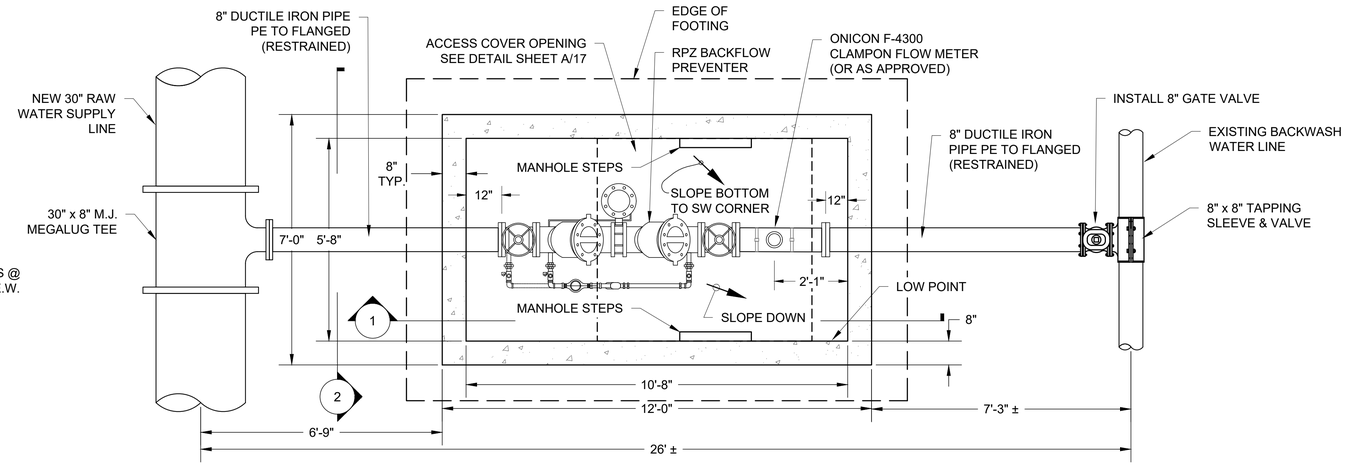
SHEET NO. 15

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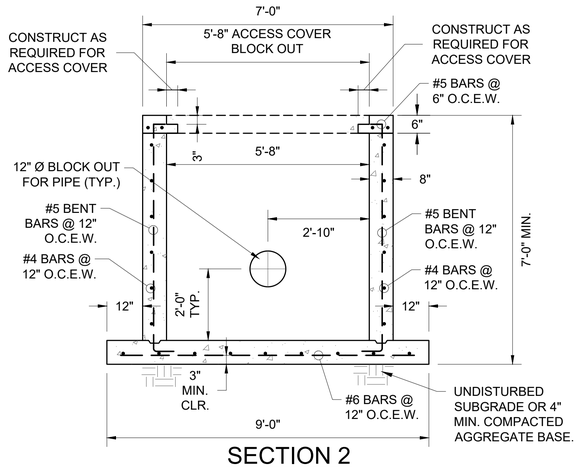
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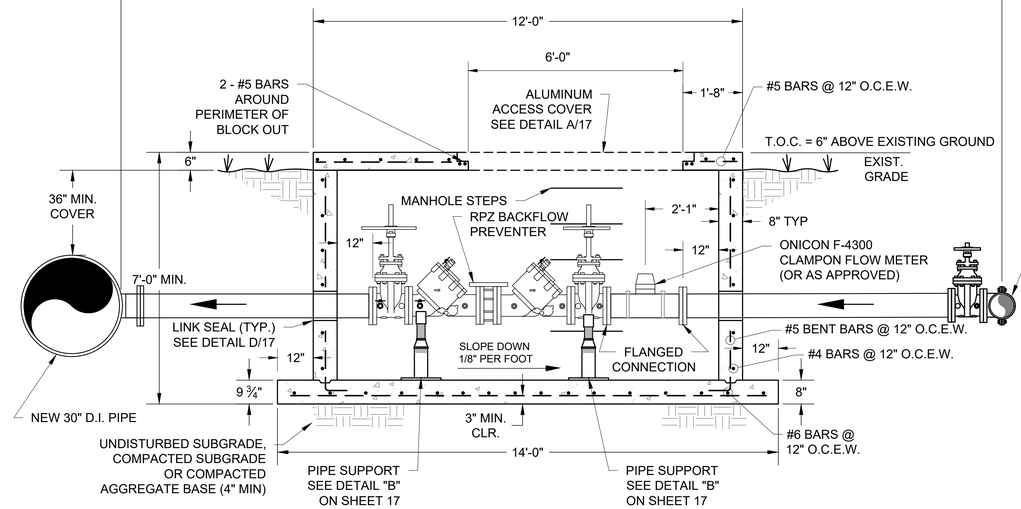
TOP



PLAN



SECTION 2



SECTION 1

NOTES:
1. MINIMUM OF 4000 PSI 28 DAY COMPRESSIVE STRENGTH.
2. REINFORCING STEEL TO BE DEFORMED GRADE 60.
3. AIR ENTRAINMENT TO BE 4% TO 6%.
4. PRECAST STRUCTURES ARE ALLOWED SUBJECT TO APPROVAL.
5. ALL EXPOSED EDGES TO HAVE A 3/4" CHAMFER.
6. ALL BOLTS ARE TO BE ASTM 316 STAINLESS STEEL.
7. THE RPZ BACKFLOW PREVENTER SHALL BE CALIBRATED AND CONTRACTOR IS TO PROVIDE A CERTIFICATE OF CALIBRATION TO THE OWNER.
8. THE FLOW METER SHALL BE CALIBRATED AND CONTRACTOR IS TO PROVIDE A CERTIFICATE OF CALIBRATION TO THE OWNER.

WATER SUPPLY CONNECTION - DETAILS A

SCALE: N.T.S.

REV. NO.	DATE	DRWN	CHKD	REMARKS

CORPORATE REGISTRATION — CRIST ENGINEERS, INC. CONSULTING ENGINEERS No. 91 — ARKANSAS ENGINEER

STATE OF ARKANSAS — REGISTERED PROFESSIONAL ENGINEER — No.7996 — KELLY D. VANLANDINGHAM — 6/24/20

THIS LINE MEASURES 1" WHEN PLOTTED FULL SIZE

DESIGNED:	KDV
DRAFTED:	RDW
CHECKED:	MDD
DATE:	JUN 2020

CRIST ENGINEERS, INC.
CONSULTING ENGINEERS
205 EXECUTIVE COURT
LITTLE ROCK, ARKANSAS 72205
TELEPHONE: (501) 664-1552
FAX: (501) 664-8579
WWW.CRISTENGINEERS.COM

GARLAND COUNTY, ARKANSAS

CITY OF HOT SPRINGS UTILITIES DEPARTMENT
LAKE OUACHITA WATER SUPPLY PROJECT

RAW WATER TRANSMISSION PIPELINE

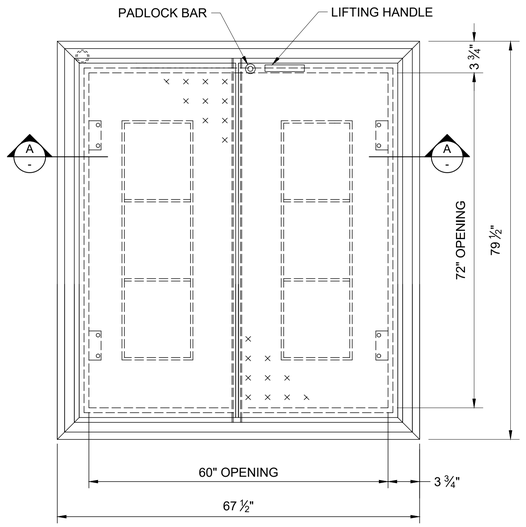
CONTRACT 1 - BLAKELY MOUNTAIN DAM RD TO OUACHITA WTP
WATER SUPPLY CONNECTION DETAILS

JOB NO. 1926

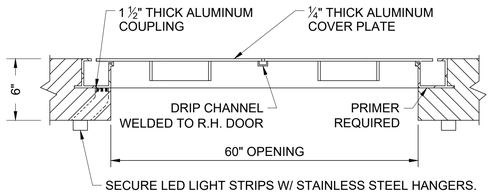
SHEET NO. 16

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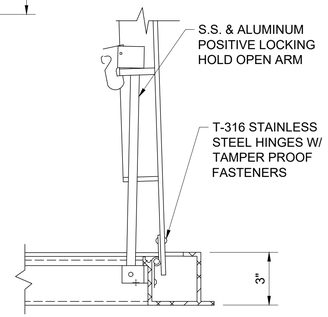
P:\2019 Projects\1926 - CHS Lake Ouachita Water Supply - Raw & Finished Lines\09 - RAW Water Contracts\01 - Contract 1\06 - CADD\05 - RAW Water Line\1 - Construction\CONTRACT 1\1926 - CONTRACT 1-VALVE VAULT DETAILS.dwg 6/23/2020 9:44:01 AM



PLAN



SECTION A - A



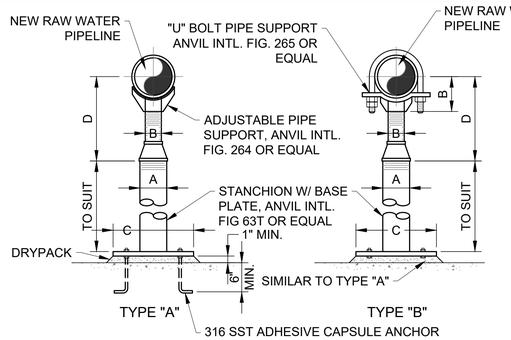
(COVER SHOWN IN OPEN POSITION)

DETAIL

ACCESS COVER

DETAIL A

N.T.S.

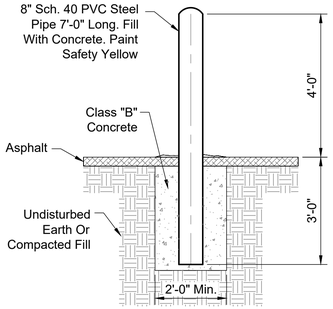


ADJUSTABLE PIPE SUPPORT

DETAIL B

NTS

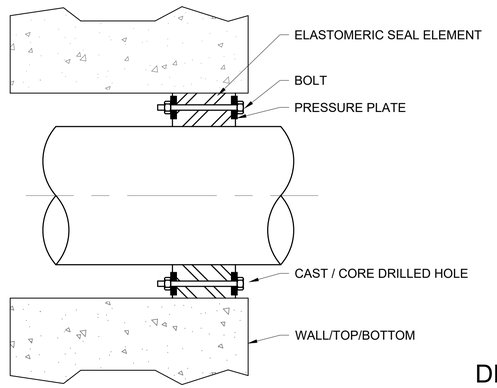
ADJUSTABLE PIPE SUPPORT APPROX. DIMENSIONS IN INCHES					
PIPE SIZE	A	B	C	D MIN.	D MAX.
2 ½	2 ½	1 ½	9	8	11 ½
3	2 ½	1 ½	9	8 ¼	11 ¾
3 ½	2 ½	1 ½	9	8 ½	12
4	3	2 ½	9	10 ¼	14
6	3	2 ½	9	11 ⅝	15 ¼
8	3	2 ½	9	13 ⅝	16 ½
10	3	2 ½	9	14 ⅝	18 ¼
12	3	2 ½	9	15 ⅝	19 ¾
14	4	3	11	18 ⅛	20 ¾
16	4	3	11	19 ⅛	22 ¼
18	6	3 ½	13 ½	21 ¼	24
20	6	3 ½	13 ½	23 ¼	25 ½
24	6	4	13 ½	26 ½	28 ¾
30	6	4	13 ½	29 ⅝	31 ½
32	6	4	13 ½	30 ⅝	32 ¾
36	6	4	13 ½	32 ⅝	34 ¾



BOLLARD TYPE "A"

DETAIL C

N.T.S.



DIP PIPE SIZE (INCHES)	CAST OR CORE BIT DRILLED HOLE ID (INCHES)	LINK SEAL SIZE	LINKS PER SEAL	MODEL
2	4	LS-300	6	S-316
2.25	4	LS-200	9	S-316
3	6	LS-315	10	S-316
4	8	LS-410	7	S-316
6	10	LS-410	10	S-316
8	12	LS-400	9	S-316
10	14	LS-400	10	S-316
12	16	LS-360	21	S-316
14	18	LS-360	24	S-316
16	20	LS-360	27	S-316
18	24	LS-525	17	S-316
20	26	LS-525	19	S-316
24	28	LS-425	23	S-316

IPS PIPE SIZE (INCHES)	CAST OR CORE BIT DRILLED HOLE ID (INCHES	LINK SEAL SIZE	LINKS PER SEAL	MODEL
0.5	2	LS-200	4	S-316
0.75	3	LS-315	4	S-316
1	3	LS-300	4	S-316
1.25	3	LS-275	8	S-316
1.5	4	LS-315	6	S-316
2	4	LS-300	6	S-316
2.5	4	LA-200	9	S-316
3	5	LS-300	8	S-316
3.5	6	LS-315	10	S-316
4	6	LS-300	10	S-316
5	8	LS-340	13	S-316
6	10	-LS-475	10	S-316
8	12	LS-475	12	S-316
10	14	LS-475	14	S-316
12	16	LS-475	17	S-316
14	18	LS-575	16	S-316
16	20	LS-575	18	S-316
18	22	LS-575	20	S-316
20	24	LS-475	16	S-316
22	26	LS575	24	S-316
24	28	LS-475	31	S-316

LINK SEAL

DETAIL D

N.T.S.

REV. NO.	DATE	DRWN	CHKD	REMARKS

CRIST ENGINEERS, INC. CONSULTING ENGINEERS No. 91 CORPORATE REGISTRATION ARKANSAS ENGINEER

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No.7996 KELLY D. VANLANDINGHAM 6/30/20

0 1" 1" = 1"

THIS LINE MEASURES 1" WHEN PLOTTED FULL SIZE

DESIGNED: KDV
DRAFTED: RDW
CHECKED: MDD
DATE: JUN 2020

CRIST ENGINEERS, INC.
CONSULTING ENGINEERS
205 EXECUTIVE COURT
LITTLE ROCK, ARKANSAS 72205
TELEPHONE: (501) 664-1552
FAX: (501) 664-8579
WWW.CRISTENGINEERS.COM

GARLAND COUNTY, ARKANSAS

CITY OF HOT SPRINGS UTILITIES DEPARTMENT
LAKE OUACHITA WATER SUPPLY PROJECT

RAW WATER TRANSMISSION PIPELINE

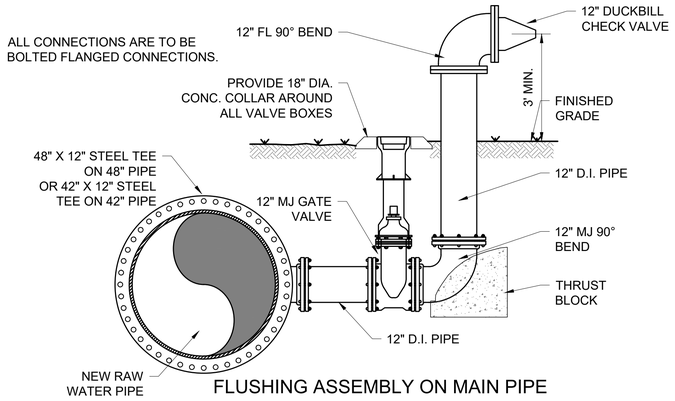
CONTRACT 1 - BLAKELY MOUNTAIN DAM RD TO OUACHITA WTP
VAULT DETAILS

JOB NO. 1926

SHEET NO. 17

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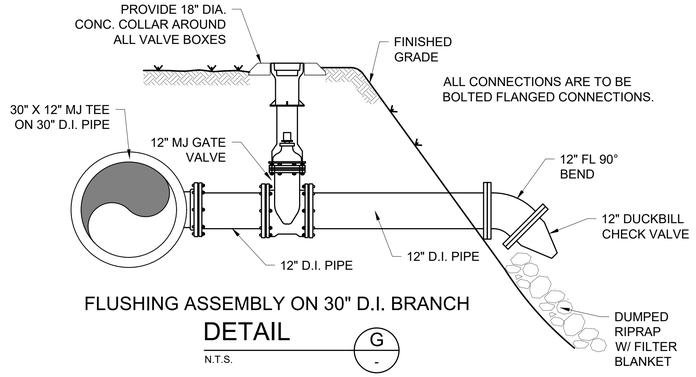
P:\2019 Projects\1926 - CHS Lake Ouachita Water Supply - Raw & Finished Lines\09 - RAW Water Contracts\01 - Contract 1\06 - CADD\05 - RAW Water Line\1 - Construction\CONTRACT 1\1926 - CONTRACT 1-DETAILS.dwg 6/23/2020 9:04:20 AM



FLUSHING ASSEMBLY ON MAIN PIPE

DETAIL A

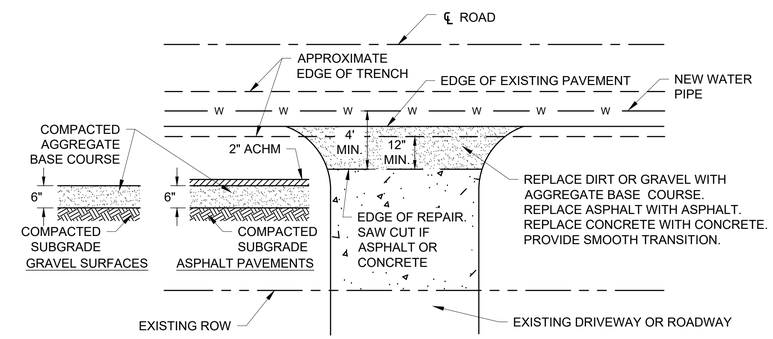
N.T.S.



FLUSHING ASSEMBLY ON 30" D.I. BRANCH

DETAIL G

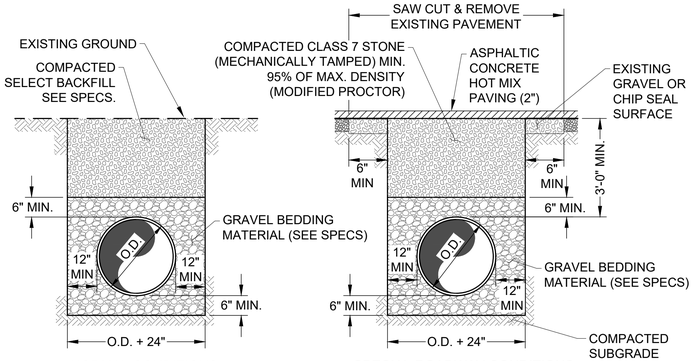
N.T.S.



NOTES:
1. THIS DETAIL IS FOR REPAIR OF EXISTING DRIVEWAYS AND INTERSECTIONS ONLY.

ASPHALT PAVEMENT OR GRAVEL REPAIR D

N.T.S.



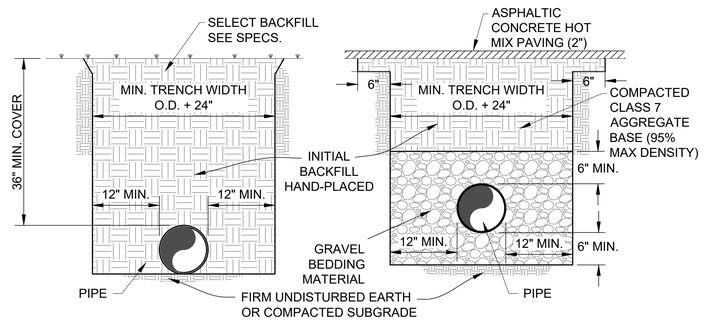
NORMAL CONDITIONS

SPECIAL ROADWAY CONDITIONS
MUST MEET LOCAL REQUIREMENTS

NOTES:
1. USE ROADWAY CONDITIONS WHEN INSTALLING PIPE IN AREAS SUBJECT TO TRAFFIC LOADS.
2. SEE BEDDING SPECS.
3. NO ROCKS LARGER THAN 4" DIAMETER IN BACKFILL.
4. CONTRACTOR TO CONSTRUCT TRENCH USING METHODS ALLOWED BY LOCAL, STATE, OR FEDERAL REQUIREMENTS TO MAINTAIN A SAFE WORKING CONDITION.

WATER LINE BEDDING - STEEL PIPE B

N.T.S.



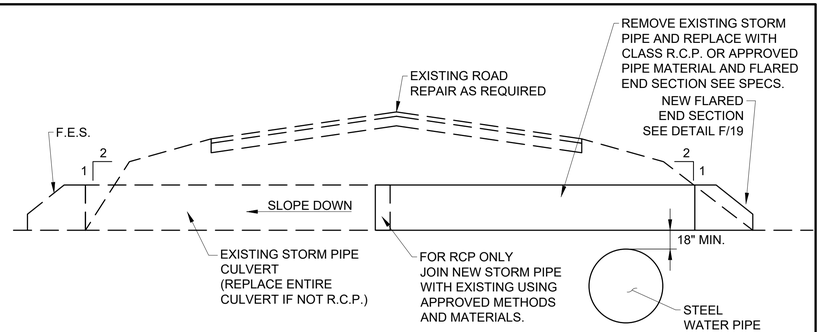
NORMAL CONDITIONS

SPECIAL ROADWAY CONDITIONS
MUST MEET LOCAL REQUIREMENTS

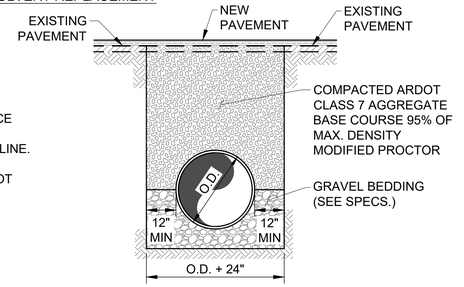
BEDDING NOTES:
1. USE "SPECIAL BEDDING" WHERE MUCK OR ROCK IS FOUND IN TRENCH BOTTOM.
2. GRAVEL BEDDING MATERIAL SHALL BE SAND, WASHED GRAVEL, OR PEA GRAVEL, MAXIMUM SIZE 3/4".
3. INITIAL BACKFILL BEDDING MATERIAL SHALL BE NON-PLASTIC, NATIVE, OR BORROWED SOILS.
4. NO ROCKS LARGER THAN 4" IN DIAMETER IN BACKFILL.

WATER LINE BEDDING - DUCTILE IRON PIPE E

N.T.S.



TYPICAL CULVERT REPLACEMENT

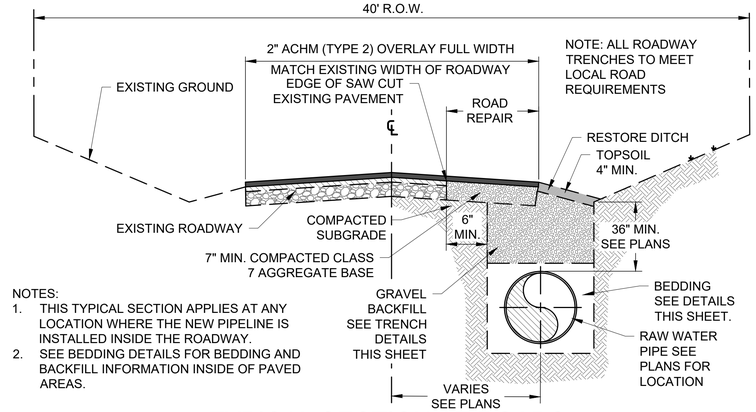


TYPICAL STORM PIPE TRENCH UNDER PAVEMENT

NOTES:
1. IF CULVERT IS REINFORCED CONCRETE PIPE IN GOOD CONDITION THEN ONLY REPLACE PORTION AS NEEDED FOR INSTALLATION OF NEW WATER LINE.
2. IF CULVERT MATERIAL DOES NOT MEET CONDITIONS OF NOTE 1 ABOVE THEN REPLACE ENTIRE CULVERT WITH CLASS III REINFORCED CONCRETE PIPE.

TYPICAL CULVERT REPLACEMENT C

N.T.S.



NOTES:
1. THIS TYPICAL SECTION APPLIES AT ANY LOCATION WHERE THE NEW PIPELINE IS INSTALLED INSIDE THE ROADWAY.
2. SEE BEDDING DETAILS FOR BEDDING AND BACKFILL INFORMATION INSIDE OF PAVED AREAS.

TYPICAL SECTION AT ROADS F

N.T.S.

REV. NO.	DATE	DRWN	CHKD	REMARKS

CRIST ENGINEERS, INC. CONSULTING ENGINEERS No. 91 — CORPORATE REGISTRATION — ARKANSAS ENGINEER

STATE OF ARKANSAS — REGISTERED PROFESSIONAL ENGINEER — No.7996 — BRADLEY D VANLANDINGHAM — 6/23/20

0 1" — 1" = 1" — THIS LINE MEASURES 1" WHEN PLOTTED FULL SIZE

DESIGNED:	KDV
DRAFTED:	RDW
CHECKED:	MDD
DATE:	JUN 2020

CRIST ENGINEERS, INC.
CONSULTING ENGINEERS
205 EXECUTIVE COURT
LITTLE ROCK, ARKANSAS 72205
TELEPHONE: (501) 664-1552
FAX: (501) 664-8579
WWW.CRISTENGINEERS.COM

GARLAND COUNTY, ARKANSAS

CITY OF HOT SPRINGS UTILITIES DEPARTMENT
LAKE OUACHITA WATER SUPPLY PROJECT

RAW WATER TRANSMISSION PIPELINE

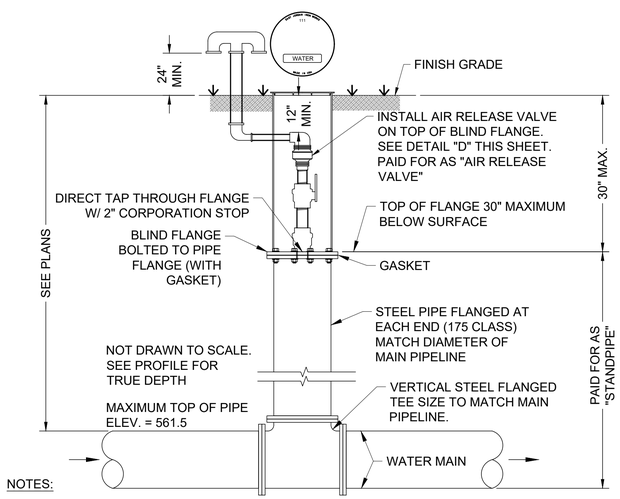
CONTRACT 1 - BLAKELY MOUNTAIN DAM RD TO OUACHITA WTP
DETAILS I

JOB NO. 1926

SHEET NO. 18

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P:\2019 Projects\1926 - CHS Lake Ouachita Water Supply - Raw & Finished Lines\09 - RAW Water Contracts\01 - Contract 1\06 - CADD\05 - RAW Water Line\1 - Construction\CONTRACT 1\1926 - CONTRACT 1-DETAILS.dwg 6/18/2020 11:04:45 AM

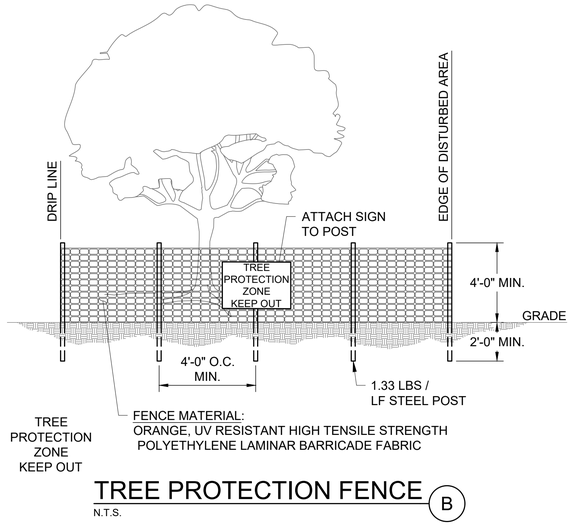


NOTES:

1. AIR VALVES SHALL HAVE NPT INLET AND OUTLETS
2. TOP OF AIR VALVE SHALL BE MIN. 12" BELOW GROUND.
3. SEAL WALL PENETRATIONS WITH BUTYL SEALANT.
4. ALL BOLTS TO BE STAINLESS STEEL.
5. CONTRACTOR TO SUBMIT FABRICATION DRAWINGS OF STANDPIPE FOR APPROVAL.

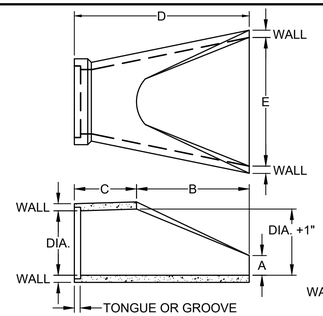
STANDPIPE WITH AIR RELEASE VALVE — A

N.T.S.

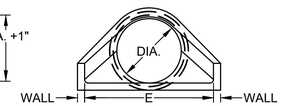


TREE PROTECTION FENCE — B

N.T.S.

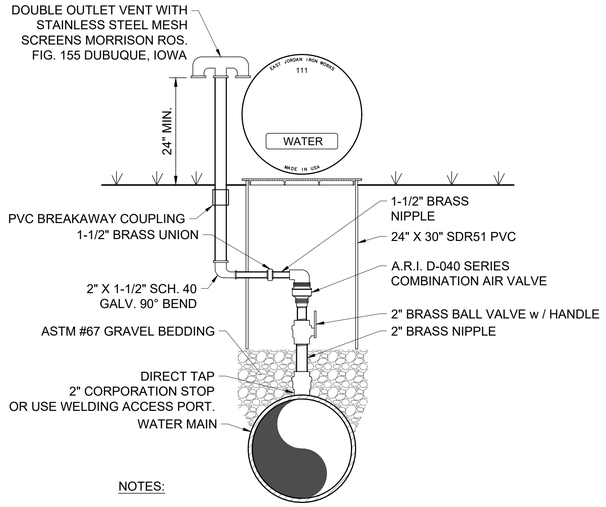


DIA.	WALL	TONGUE OR GROOVE	WEIGHT	A	B	C	D	E	DIA. +1
15"	2 1/4"	2"	970	6"	27"	46"	73"	30"	16"
18"	2 1/2"	2 1/2"	1340	9"	27"	46"	73"	36"	19"
24"	3"	2 1/2"	1820	9 1/2"	43 1/2"	30"	73 1/2"	48"	25"
30"	3 1/2"	3"	2400	12"	54"	19 3/4"	73 3/4"	60"	31"
36"	4"	3 1/2"	5500	15"	63"	34 3/4"	97 3/4"	72"	37"
42"	4 1/2"	4"	6300	21 1/2	67"	41 1/2"	103 1/2"	76"	43"



FLARED END SECTION — C

N.T.S.

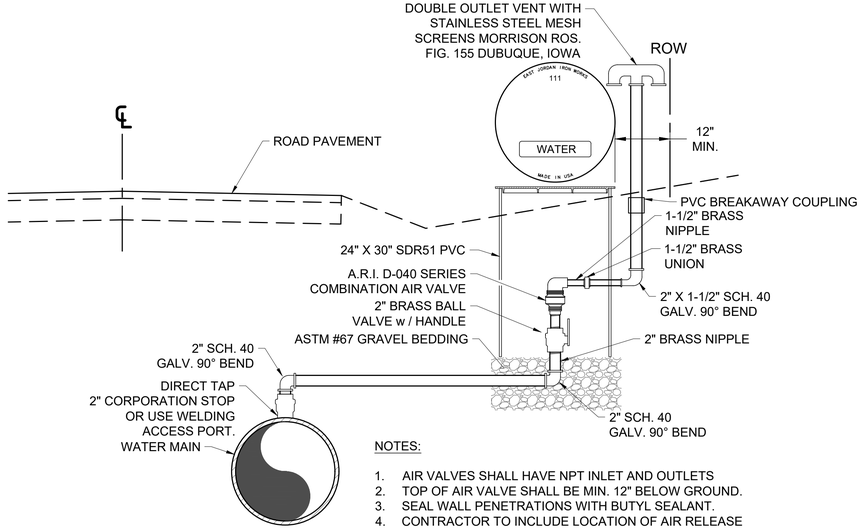


NOTES:

1. AIR VALVES SHALL HAVE NPT INLET AND OUTLETS
2. TOP OF AIR VALVE SHALL BE MIN. 12" BELOW GROUND.
3. SEAL WALL PENETRATIONS WITH BUTYL SEALANT.
4. CONTRACTOR TO INCLUDE LOCATION OF AIR RELEASE VALVES ON PIPE LAYOUT SUBMITTAL AND METHOD OF CONNECTION TO PIPE.

AIR RELEASE VALVE — D

N.T.S



NOTES:

1. AIR VALVES SHALL HAVE NPT INLET AND OUTLETS
2. TOP OF AIR VALVE SHALL BE MIN. 12" BELOW GROUND.
3. SEAL WALL PENETRATIONS WITH BUTYL SEALANT.
4. CONTRACTOR TO INCLUDE LOCATION OF AIR RELEASE VALVES ON PIPE LAYOUT SUBMITTAL AND METHOD OF CONNECTION TO PIPE.

AIR RELEASE VALVE AT ROADWAY — E

N.T.S

REV. NO.	DATE	DRWN	CHKD	REMARKS

CORPORATE REGISTRATION — CRIST ENGINEERS, INC. CONSULTING ENGINEERS No. 91 — ARKANSAS ENGINEER

STATE OF ARKANSAS — REGISTERED PROFESSIONAL ENGINEER — No.7996 — KELLY D. VANLANDINGHAM — 6/18/20

THIS LINE MEASURES 1" WHEN PLOTTED FULL SIZE

DESIGNED:	KDV
DRAFTED:	RDW
CHECKED:	MDD
DATE:	JUN 2020

CRIST ENGINEERS, INC.
CONSULTING ENGINEERS
205 EXECUTIVE COURT
LITTLE ROCK, ARKANSAS 72205
TELEPHONE: (501) 664-1552
FAX: (501) 664-8579
WWW.CRISTENGINEERS.COM

GARLAND COUNTY, ARKANSAS

CITY OF HOT SPRINGS UTILITIES DEPARTMENT
LAKE OUACHITA WATER SUPPLY PROJECT

RAW WATER TRANSMISSION PIPELINE

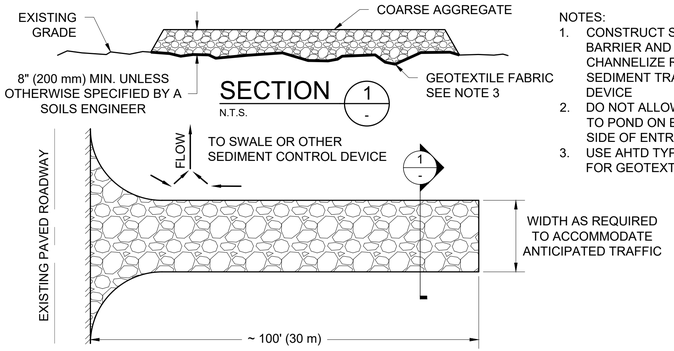
CONTRACT 1 - BLAKELY MOUNTAIN DAM RD TO OUACHITA WTP
DETAILS II

JOB NO. 1926

SHEET NO. 19

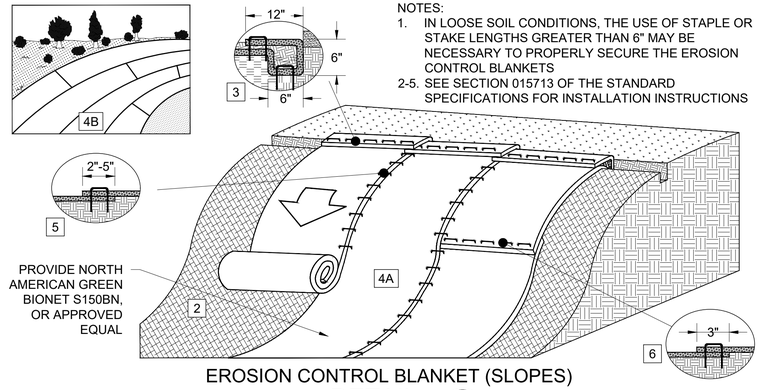
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P:\2019 Projects\1926 - CHS Lake Ouachita Water Supply - Raw & Finished Lines\09 - RAW Water Contracts\01 - Contract 1\06 - CADD\05 - RAW Water Line\1 - Construction\CONTRACT 1\Erosion Control Standard Details.dwg 6/18/2020 11:07:34 AM



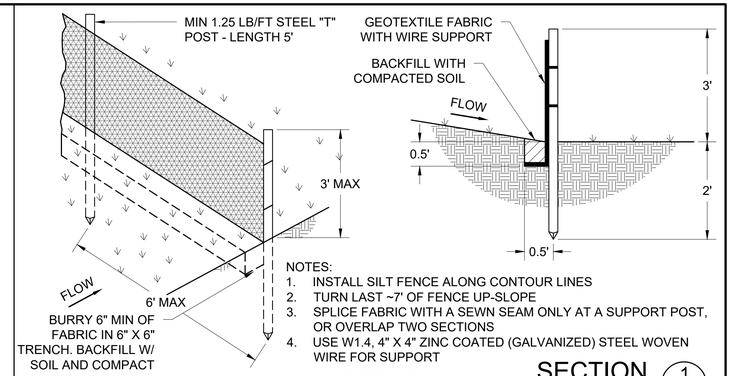
NOTES:
1. CONSTRUCT SEDIMENT BARRIER AND CHANNELIZE RUNOFF TO SEDIMENT TRAPPING DEVICE
2. DO NOT ALLOW WATER TO POND ON EITHER SIDE OF ENTRANCE
3. USE AHTD TYPE 8 OR 9 FOR GEOTEXTILE FABRIC

TEMPORARY CONSTRUCTION ENTRANCE
DETAIL A - N.T.S.



NOTES:
1. IN LOOSE SOIL CONDITIONS, THE USE OF STAPLE OR STAKE LENGTHS GREATER THAN 6" MAY BE NECESSARY TO PROPERLY SECURE THE EROSION CONTROL BLANKETS
2-5. SEE SECTION 015713 OF THE STANDARD SPECIFICATIONS FOR INSTALLATION INSTRUCTIONS

EROSION CONTROL BLANKET (SLOPES)
DETAIL B - N.T.S.

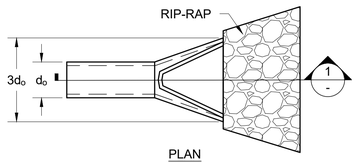


NOTES:
1. INSTALL SILT FENCE ALONG CONTOUR LINES
2. TURN LAST ~7' OF FENCE UP-SLOPE
3. SPLICE FABRIC WITH A SEWN SEAM ONLY AT A SUPPORT POST, OR OVERLAP TWO SECTIONS
4. USE W1.4, 4" X 4" ZINC COATED (GALVANIZED) STEEL WOVEN WIRE FOR SUPPORT

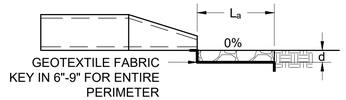
TYPICAL INSTALLATION N.T.S.

SILT FENCE
SECTION 1 - N.T.S.
DETAIL C - N.T.S.

A - LOW TAILWATER

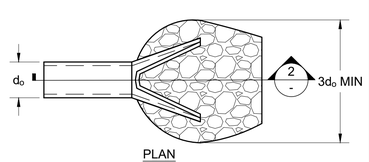


PLAN N.T.S.

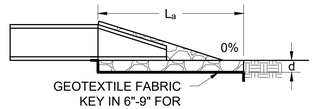


SECTION A-A N.T.S.

B - HIGH TAILWATER

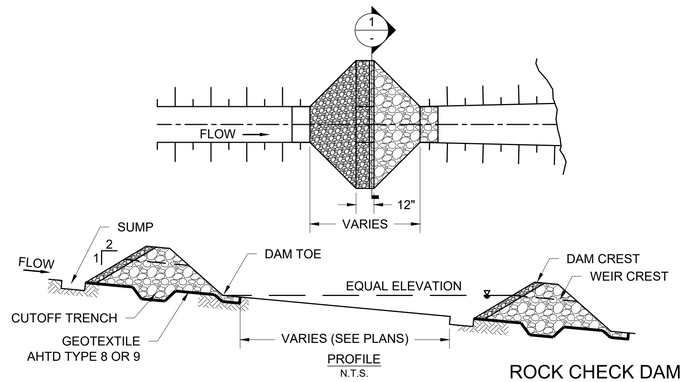


PLAN N.T.S.



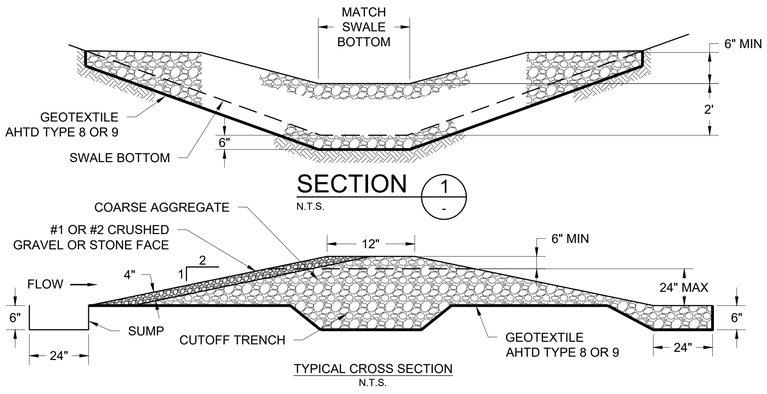
SECTION B-B N.T.S.

TEMPORARY OUTLET PROTECTION
DETAIL D - N.T.S.



PROFILE N.T.S.

ROCK CHECK DAM
DETAIL E - N.T.S.

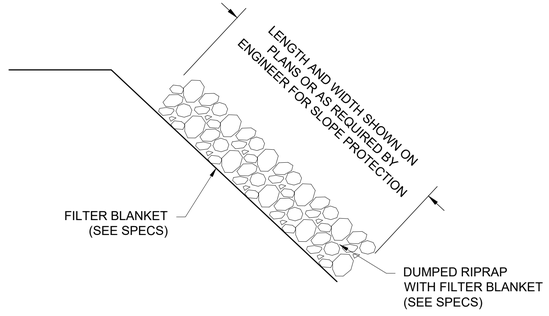


TYPICAL CROSS SECTION N.T.S.

SPECIES	SEEDING RATE (LB/1,000 FT^2)	PLANTING TIME
RYE OR CEREAL GRASSES	2.3	AUG 15-JAN 20
BROWN TOP MILLET	1.25	JAN 21-AUG 14

NOTES:
1. THE AREA DESIGNATED OR DIRECTED TO BE TEMPORARILY SEEDED DOES NOT HAVE TO BE BROUGHT TO GARDEN-LINE CONDITION, BUT SHALL BE LIGHTLY TILLED.
2. FERTILIZER SHALL BE APPLIED AT THE RATE OF 11.5 LB/1,000 FT^2 OF 10-20-10 OR THE EQUIVALENT AMOUNT OF PLANT FOOD.
3. MULCH COVER SHALL CONSIST OF STRAW FROM THRESHED RICE, OATS, WHEAT, BARLEY, OR RYE; OF WOOD EXCELSIOR, OR OF HAY OBTAINED FROM VARIOUS LEGUMES OR GRASSES SUCH AS LESPEDEZA, CLOVER, VETCH, SOYBEANS, BERMUDA, CARPET SEDGE, BAHIA, FESCUE, OR OTHER LEGUMES OR GRASSES; OR A COMBINATION THEREOF. MULCH SHALL BE DRY AND REASONABLY FREE FROM NOXIOUS WEEDS. MULCH COVER SHALL BE APPLIED AT THE RATE OF 92 LB/1,000 FT^2 IMMEDIATELY AFTER SEEDING AND SHALL BE SPREAD UNIFORMLY OVER THE ENTIRE AREA.
4. FROM APRIL 1 TO DECEMBER 31, EITHER THE DAY BEFORE THE TEMPORARY SEEDING IS PLACED OR ON THE DAY OF THE TEMPORARY SEEDING OPERATION (EITHER BEFORE THE SEED IS PLACED OR AFTER THE APPLICATION OF THE MULCH COVER) , A MINIMUM OF 0.5 M GAL/1,000 FT^2 OF WATER WILL BE APPLIED.

TEMPORARY SEEDING
DETAIL F - N.T.S.



DUMPED RIPRAP
DETAIL G - N.T.S.

REV. NO.	DATE	DRWN	CHKD	REMARKS

CRIST ENGINEERS, INC. CONSULTING ENGINEERS No. 91 ARKANSAS ENGINEER

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No.7996 KELLY D. VANLANDINGHAM 6/18/20

THIS LINE MEASURES 1" WHEN PLOTTED FULL SIZE

DESIGNED:	KDV
DRAFTED:	RDW
CHECKED:	MDD
DATE:	JUN 2020

CRIST ENGINEERS, INC.
CONSULTING ENGINEERS
205 EXECUTIVE COURT
LITTLE ROCK, ARKANSAS 72205
TELEPHONE: (501) 664-1552
FAX: (501) 664-8579
WWW.CRISTENGINEERS.COM

GARLAND COUNTY, ARKANSAS

CITY OF HOT SPRINGS UTILITIES DEPARTMENT
LAKE OUACHITA WATER SUPPLY PROJECT

RAW WATER TRANSMISSION PIPELINE

CONTRACT 1 - BLAKELY MOUNTAIN DAM RD TO OUACHITA WTP
EROSION CONTROL DETAILS

JOB NO. 1926

SHEET NO. 20