

OWNER & CLIENT: Northern Kentucky Water District
 OWNER ROADS:
 KY 16 & KY 14- KYTC
 JONES ROAD and DIXON ROAD - KENTON COUNTY
 {Encroachment permits required}
 UTILITIES: Owen Co. RECC, Cincinnati Bell Telephone, Insight,
 Duke Energy

PROPOSED 8" WATER MAIN EXTENSIONS SUB-DISTRICT I KY 16, JONES ROAD AND DIXON ROAD KENTON COUNTY, KENTUCKY NORTHERN KENTUCKY WATER DISTRICT OCTOBER 2012

Occupational Safety and Health Administration (OSHA)

It shall be the full and complete responsibility of the contractor to meet and comply with safety requirements and regulations as established by OSHA or any other regulatory body. The owner and engineer will not perform any safety compliance inspections as the contractor has accepted full and complete responsibility for performing such inspections for compliance to the regulations.

The contractor shall indemnify and protect and hold harmless the owner and engineer from any loss, expense, fine, damage, or suit, including attorney's fees, arising out of any safety violation suits brought by injured persons and/or fines levied by OSHA or any other regulatory body, as a result of the contractor's work.

GENERAL NOTES:

1. CONTRACTOR SHALL SUPPLY FIELD NOTES UPON COMPLETION OF PROJECT IN SUFFICIENT DETAIL TO PREPARE "RECORD DRAWINGS."
2. TREES AND BUSHES SHALL BE REMOVED ONLY AS DIRECTED BY THE ENGINEER.
3. YARD RESTORATION SHALL CONFORM TO URBAN STANDARDS AND SPECIFICATIONS.
4. LOCATION OF UTILITIES AND STRUCTURES, BOTH SURFACE AND SUBSURFACE, ARE SHOWN ON THE PLANS FROM DATA AVAILABLE AT THE TIME OF BIDDING, AND ARE NOT NECESSARILY COMPLETE AND CORRECT. DURING CONSTRUCTION THE CONTRACTOR SHALL USE DILIGENCE IN PROTECTING FROM DAMAGE ALL EXISTING UTILITIES AND STRUCTURES WHETHER SHOWN ON THE PLAN OR NOT. IF DAMAGE IS CAUSED, THE CONTRACTOR WILL BE RESPONSIBLE FOR REPAIR OR RESTORATION OF SAME TO THE SATISFACTION OF THE ENGINEER AND UTILITY COMPANY.
5. CONTRACTOR IS RESPONSIBLE FOR EXPOSING UNDERGROUND UTILITIES AS DIRECTED BY THE ENGINEER PRIOR TO CONSTRUCTION STAKING TO VERIFY THE EXACT LOCATION AND DEPTH OF UTILITIES.
6. WHEN ENCOUNTERING CULVERTS AND UTILITY STRUCTURES ABOVE PROPOSED WATER MAIN THE CONTRACTOR WILL TUNNEL UNDER THE STRUCTURE. CONTRACTOR IS RESPONSIBLE FOR PROTECTING THE STRUCTURES FROM DAMAGE. {SEE NOTE 4}
7. CONTRACTOR TO FOLLOW EROSION CONTROL MEASURES AS SPECIFIED ON THE PLAN AND IN THE ASSOCIATED BMP {SWPPP} BOOK.
8. CONTRACTOR TO RESTORE ROAD DITCH LINE TO SATISFACTION OF ENGINEER AND GOVERNING AGENCY.

* FOR FURTHER INSTRUCTIONS AND SPECIFICATIONS - SEE SPEC. BOOK

GAS FACILITY NOTES:

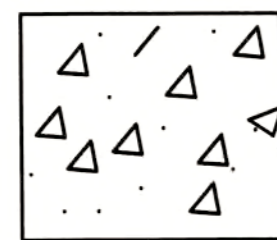
- I. FOR GAS DISTRIBUTION ENGINEERING NOTIFICATION, AGREEMENTS AND OFFICIAL CORRESPONDENCE, ADDRESS TO:
 LAURA MATE, P.E.
 GAS DISTRIBUTION ENGINEERING
 P.O. BOX 960, ROOM 460A
 CINCINNATI, OH 45201-0960
- II. THE PRINT SHOWS THE APPROXIMATE LOCATION AND DEPTHS OF COVER AND IS PROVIDED TO COMPLY WITH STATUTORY REGULATIONS. THE INFORMATION SHOULD BE USED ONLY FOR PLANNING, NOT CONSTRUCTION.
- III. ALL GAS FACILITY DEPTHS NOTED ARE APPROXIMATE DEPTHS RECORDED AT THE TIME OF INSTALLATION ANY RESULTING GRADE CHANGES SINCE THE TIME OF THE MAIN INSTALLATION WILL CAUSE THE EXISTING DEPTH OF COVER TO BE DIFFERENT. EXTREME CARE MUST BE TAKEN TO ENSURE SAFE EXCAVATION WHEN APPROACHING KNOWN OR SUSPECTED GAS FACILITIES.
- IV. ALL GAS SERVICES WERE INSTALLED AT A MINIMUM OF 1'-6" COVER. SEE III ABOVE.
- V. FOR ADDITIONAL GAS FACILITY INFORMATION, CALL (513)287-2532 OR (513)287-1264.
- VI. TO COMPLY WITH FEDERAL AND STATE REGULATIONS CONCERNING DAMAGE PREVENTION PROGRAMS THE UTILITY COMPANIES MUST BE CONTACTED AT LEAST 48 HOURS (2 WORKING DAYS) PRIOR TO EXCAVATION BY CALLING KENTUCKY UNDERGROUND PROTECTION INC. (KUP), TOLL FREE AT 1-800-752-6007.

CONSTRUCTION NOTES:

- I. GAS FACILITIES ARE TO BE KEPT IN SERVICE AT ALL TIMES.
- II. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL DAMAGE TO GAS FACILITIES DURING OR AS A RESULT OF THE CONTRACTOR'S CONSTRUCTION. ALL DAMAGE TO GAS FACILITIES DURING ADJUSTMENTS, RELOCATION'S AND/OR REPAIRS WILL BE MADE AT THE CONTRACTOR'S EXPENSE.
- III. THE CONTRACTOR SHALL SHEET AND SHORE ALL EXCAVATIONS AS REQUIRED TO CONTINUOUSLY SUPPORT GAS FACILITIES WITHIN THE ZONE OF INFLUENCE (AS DETERMINED BY THE NATURAL ANGLE OF REPOSE OF THE SOIL).
- IV. CROSSING BURIED GAS FACILITIES WITH HEAVY CONSTRUCTION EQUIPMENT MAY CAUSE DAMAGE TO THE GAS FACILITIES. CONTACT THE GAS ENGINEERING DEPARTMENT FOR DETAILS ON HOW TO PROTECT THE GAS FACILITIES FROM DAMAGE.
- V. THE CONTRACTOR SHALL NOT BACKFILL EXPOSED GAS FACILITIES UNTIL THE UTILITY HAS INSPECTED ITS FACILITIES AND PERFORMED ANY MAINTENANCE AND/OR ADJUSTMENTS THAT MAY BE REQUIRED.
- VI. THE CONTRACTOR IS RESPONSIBLE FOR PREVENTING ANY DAMAGE TO OUR GAS FACILITIES. THIS INCLUDES PROTECTION OF COOLINGS AND WRAPPINGS ON STEEL GAS MAINS. IT ALSO INCLUDES ANY DAMAGE WHICH MA HAVE OCCURRED TO PLASTIC GAS MAINS, SUCH AS CRIMPS OR GAUGES.
- VII. WHEN CAST IRON OR SIMILAR GAS FACILITIES ARE EXPOSED OR INTERFERED WITH BY THE CONTRACTOR, REPLACEMENT OR REINFORCEMENT BY ULH&P MAY BE REQUIRED AT THE CONTRACTOR'S EXPENSE. BACKFILL WITH CONTROL LOW STRENGTH MATERIAL WILL BE REQUIRED.
- VIII. BLASTING OR OTHER CONSTRUCTION PROCEDURES WHICH MAY TRANSMIT LOADS OR VIBRATIONS IN THE VICINITY OF GAS FACILITIES MUST BE APPROVED BY ULH&P'S GAS ENGINEERING DEPARTMENT. A BLASTING PLAN, IDENTIFYING ALL PERTINENT INFORMATION, MUST BE SUBMITTED IN WRITING BY A BLASTING EXPERT PRIOR TO ANY WORK.

PROPOSED DEVELOPMENTS AT GAS R/W & EASEMENTS (IF APPLICABLE)

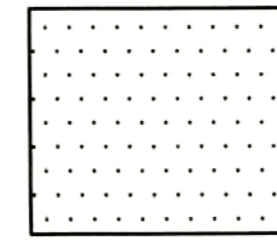
- I. PROPOSED DEVELOPMENT PLANS AROUND AND NEAR GAS FACILITIES WITHIN PRIVATE EASEMENTS MUST BE SUBMITTED TO DUKE'S GAS ENGINEERING DEPARTMENT FOR REVIEW. THESE PLANS MUST BE APPROVED ANY WORK MAY BEGIN WITHIN OUR EASEMENT.
- II. SPECIFIED EASEMENT WIDTHS MUST BE MAINTAINED IN ORDER FOR DUKE TO PROTECT IT'S FACILITIES.
- III. NO PERMANENT STRUCTURES MAY BE BUILT WITHIN THE EASEMENTS.
- IV. CUTS AND FILL S ARE GENERALLY NOT PERMITTED WITHIN THE EASEMENTS. SOME FILLS MAY BE ALLOWED AND WILL BE REVIEWED ON AN INDIVIDUAL BASIS. ANY PERMITTED FILLS WILL BE LIMITED TO AN AMOUNT WHICH WILL ALLOW ULH&P TO PROPERLY MAINTAIN ITS FACILITIES.
- V. PERPENDICULAR UTILITY CROSSINGS OF GAS EASEMENTS ARE ACCEPTABLE, PROVIDED PROPER CLEARANCES ARE MAINTAINED. PARALLEL INSTALLATION ARE NORMALLY NOT ALLOWED.



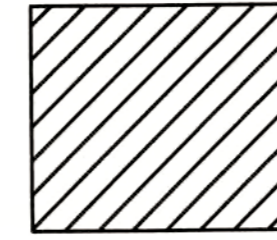
CONCRETE DRIVES & WALKS



MILL & RESURFACE

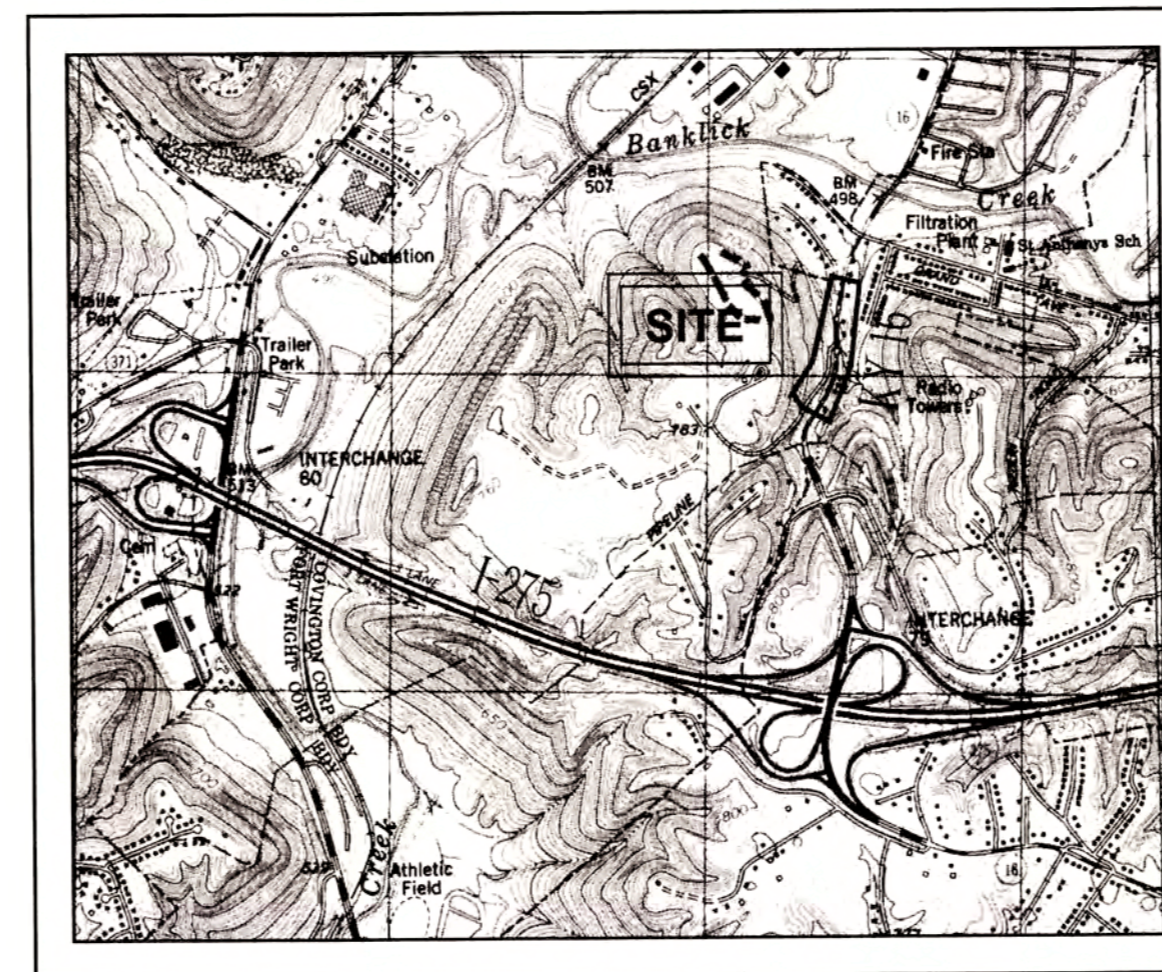


GRAVEL DRIVE

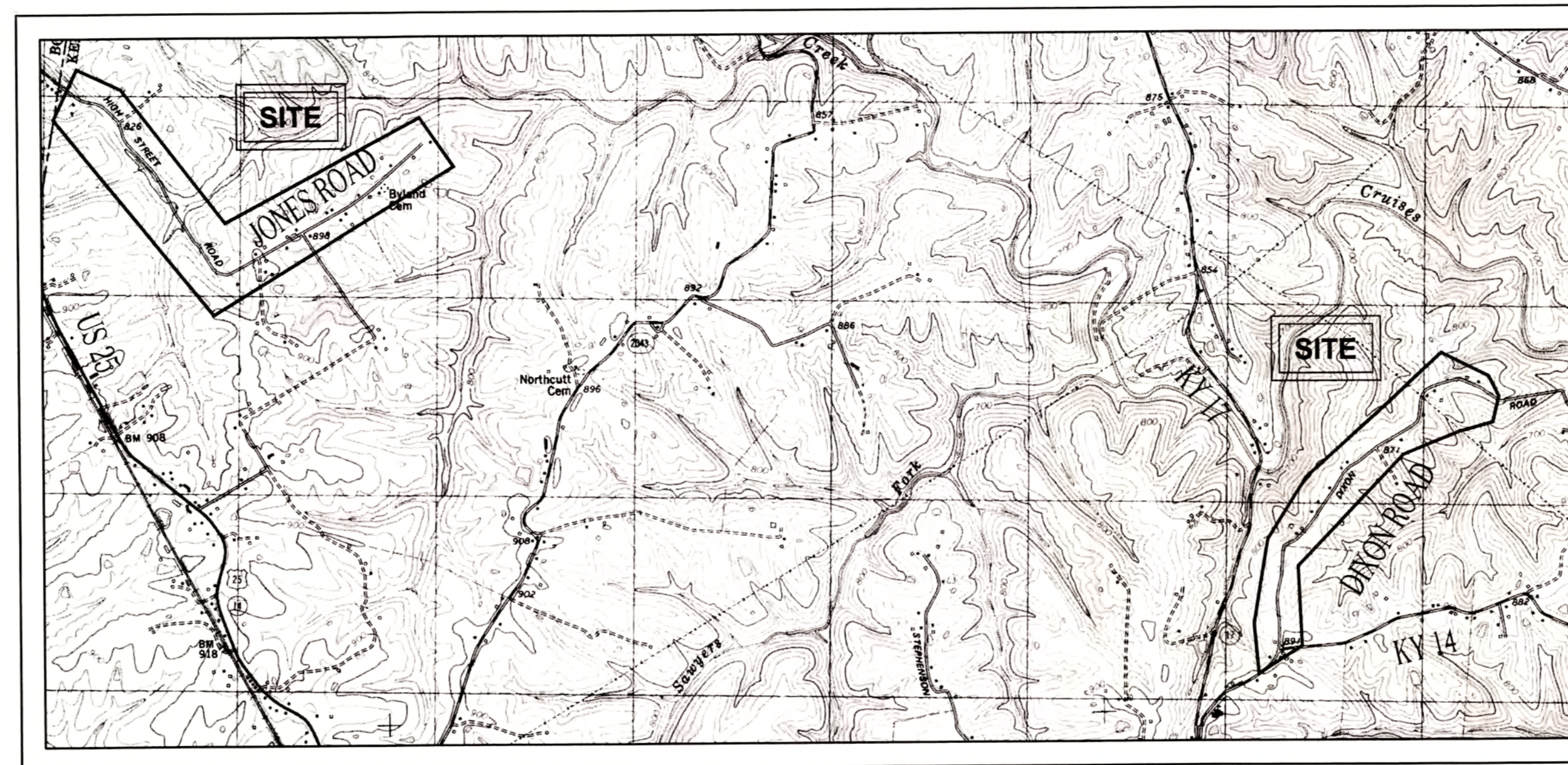


BLACKTOP DRIVES

SEE BID SHEETS FOR RESTORATION SPECIFICATIONS



SCALE 1"=2000'
 U.S.G.S. COVINGTON QUAD

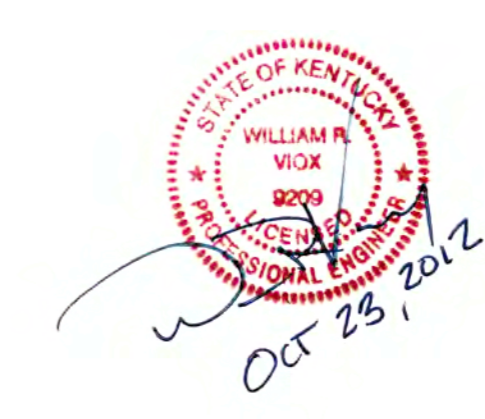


SCALE 1"=2000'
 U.S.G.S. WALTON QUAD



VIOX & VIOX
 Civil Engineers, Surveyors, and Landscape Architects

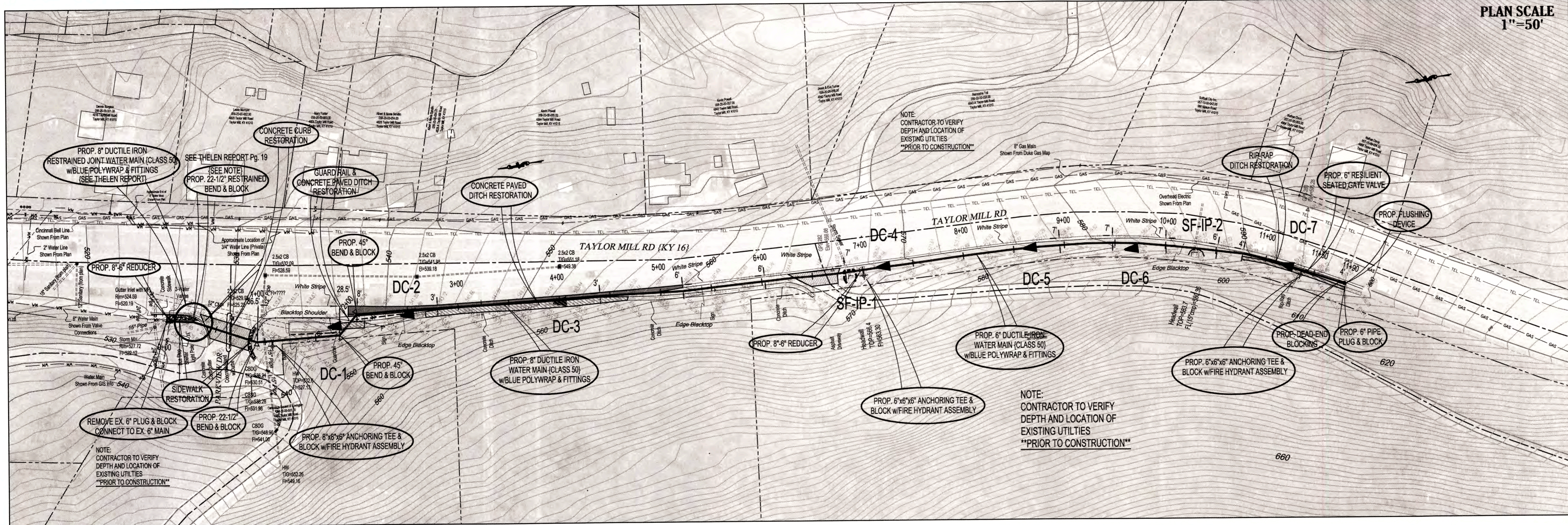
466 Erlanger Road • Erlanger, Kentucky 41018
 Ph (859) 727-3293 • Fax (859) 727-8452 • www.vioxinc.com



SHEET INDEX

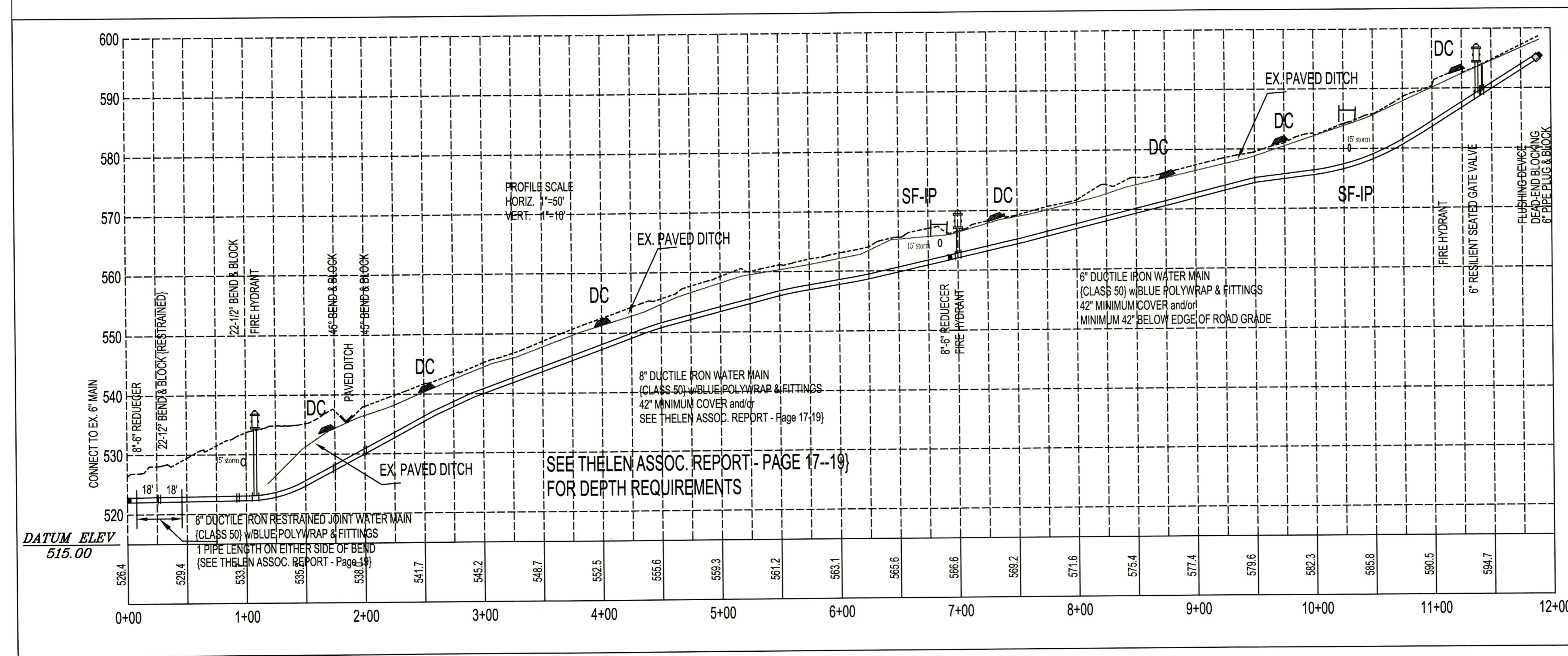
- 1 TITLE SHEET/GENERAL NOTES
- 2 KY 16
- 3-7 JONES ROAD
- 8-11 DIXON ROAD
- 12-13 DETAILS

* ALL SUBMITTALS MAY NOT INCLUDE ENTIRE SET OF DRAWINGS



STA. 1+25 TO END OF ALIGNMENT THE WATER MAIN SHALL BE INSTALLED SUCH THAT THE TOP OF THE MAIN IS IMBEDDED AT LEAST TWO (2) FEET BELOW THE INVERT OF THE PARALLEL DRAINAGE SWALE AND AT LEAST TWO (2) FEET BELOW THE SURFACE OF THE COMPETENT GRAY SHALE AND LIMESTONE BEDROCK ENCOUNTERED BELOW A DEPTH OF TWO (2) FEET IN TEST BORINGS 1 & 2. THE BEDROCK EMBEDMENT SHOULD BE FIELD VERIFIED DURING CONSTRUCTION. THE OPEN UNBACKFILLED TRENCH LENGTH SHOULD BE RESTRICTED AS NECESSARY IN ORDER TO PREVENT MOVEMENT OF OR DAMAGE TO THE STEEP HILLSIDE ABOVE THE PROPOSED WATER MAIN, AS WELL AS THE SURROUNDING GROUND SURFACE. THE EXISTING PAVEMENT AND INFRASTRUCTURE. (THELEN ASSOC. REPORT - Page 17-19)

STA. 0+27 (22.5 DEGREE BEND) RESTRAINED JOINT PIPE TO BE INSTALLED TO RESIST THRUST FORCES FOR ONE-PIPE LENGTH ON EACH SIDE OF THE BEND. INSTALL STANDARD SIZE BLOCK IN LIEU OF RESTRAINED JOINT BLOCK. (THELEN ASSOC. REPORT - 19)



EPSC LEGEND

SF-IP	SILT FENCE INLET PROTECTION
▲	DITCH CHECK
--SF--	SILT FENCE

- EROSION CONTROL NOTES:**
- EXISTING VEGETATION SHALL BE PRESERVED WHERE POSSIBLE. ALL DISTURBED AREAS OF THE SITE SHALL BE STABILIZED. STABILIZATION SHALL BEGIN WITHIN 14 DAYS ON AREAS OF THE SITE WHERE CONSTRUCTION ACTIVITIES HAVE PERMANENTLY OR TEMPORARILY (FOR 21 DAYS OR MORE) CEASES. WHEN SNOW COVER CAUSES DELAYS, STABILIZATION SHALL BEGIN AS SOON AS POSSIBLE.
 - CONTRACTOR SHALL INSPECT THE BMP'S AT LEAST EVERY 7 DAYS AND AFTER A RAIN EVENT OF 0.5" AND GREATER.
 - BEST MANAGEMENT PRACTICES (BMP'S) SHOWN ON PLAN SHALL BE REVISED OR IMPLEMENTED AS DEEMED NECESSARY.
 - ALL MAJOR GRADING ACTIVITIES AND INSPECTION LOGS SHALL BE RECORDED IN THE SWPPP BOOK THAT IS TO BE KEPT ON SITE.
 - INSPECTION OF BMP'S SHALL BE PERFORMED ON A WEEKLY BASIS BY A KEPC CERTIFIED INSPECTOR.

**PROPOSED 6" WATER MAIN EXTENSION
TAYLOR MILL ROAD (KY 16)
COVINGTON, KENTON COUNTY, KENTUCKY**

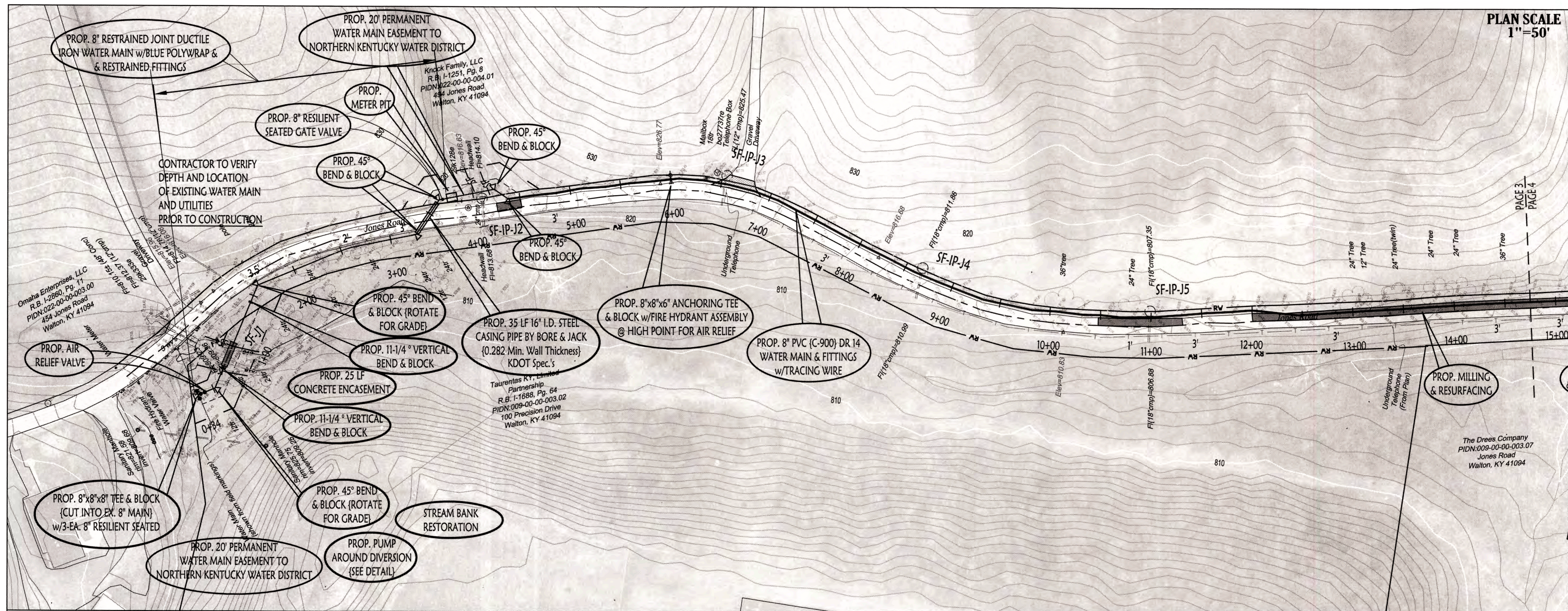


Stamp: STATE OF KENTUCKY, WILLIAM F. VIOX, REGISTERED PROFESSIONAL ENGINEER, No. 12345, Exp. 12/31/2024, OCT 25 2024

DESIGNED BY: JHV/mac
SCALE: As Shown
DRAWING NO.: NWD-1003-Sub-District FRPPT1003-Engineering
PROJECT NO.: 100-511-003
DATE: 7/1/11

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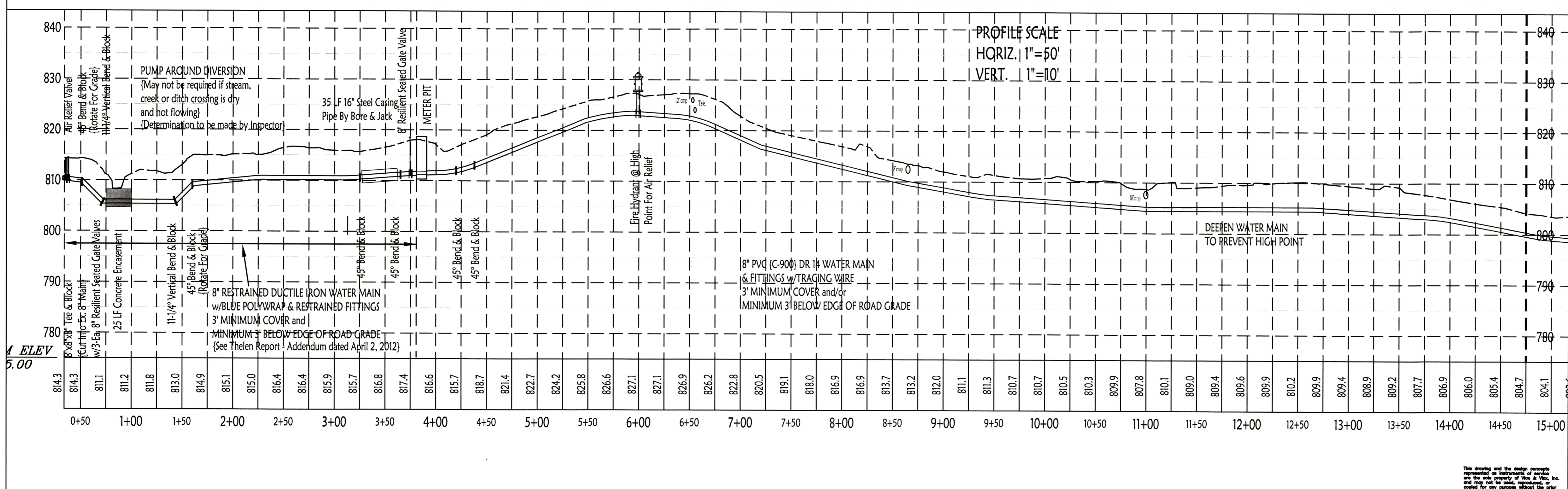


PLAN SCALE
1"=50'

EPSC LEGEND	
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-SF-	SILT FENCE

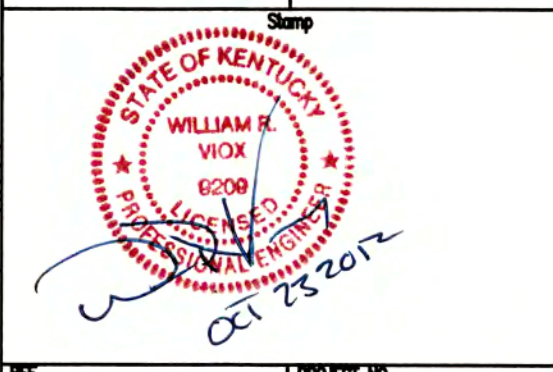
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REVISIONS
SD1 - Grading Comments 2-4-12
NKWD-3-19-12 Move to South side creek-xing



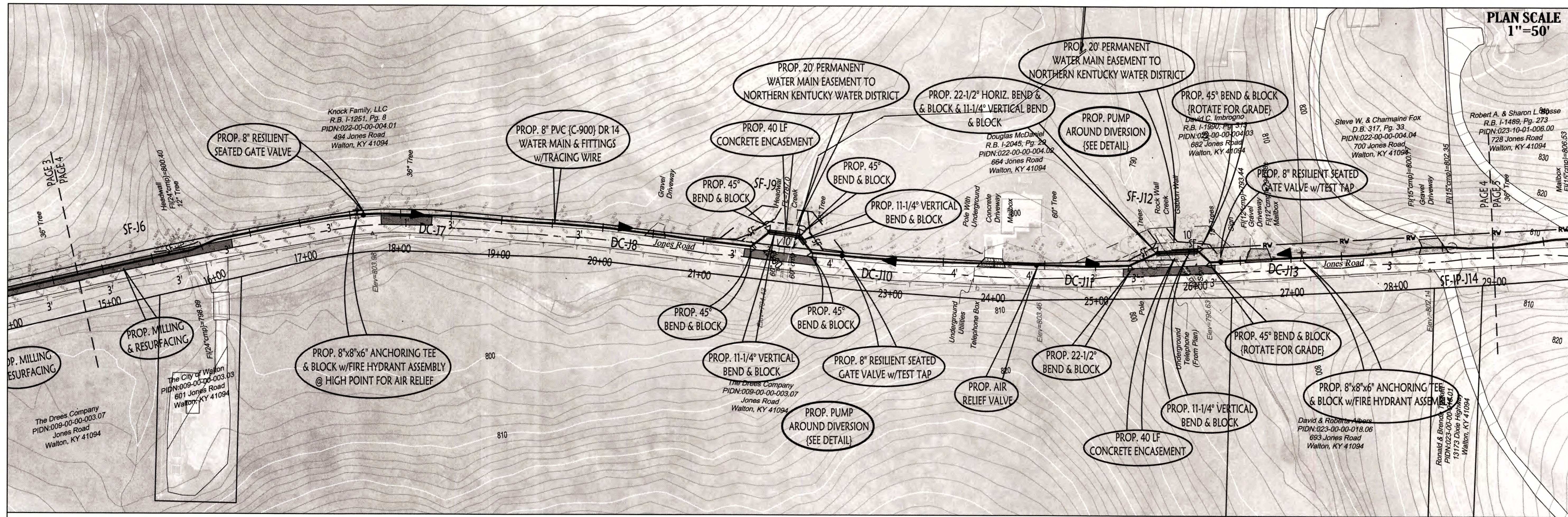
PROFILE SCALE
HORIZ. 1"=50'
VERT. 1"=10'

**PROPOSED 8" WATER MAIN EXTENSION
JONES ROAD
WALTON, KENTON COUNTY, KENTUCKY**



DESIGNED BY: JHV/mae PROJECT NO: 100-511-003
SCALE: as shown DATE: 7/5/11
DRAWING: NKWD02/SUB-District-FRPP11000/Engineering/DWG/NKWD-jones.dwg
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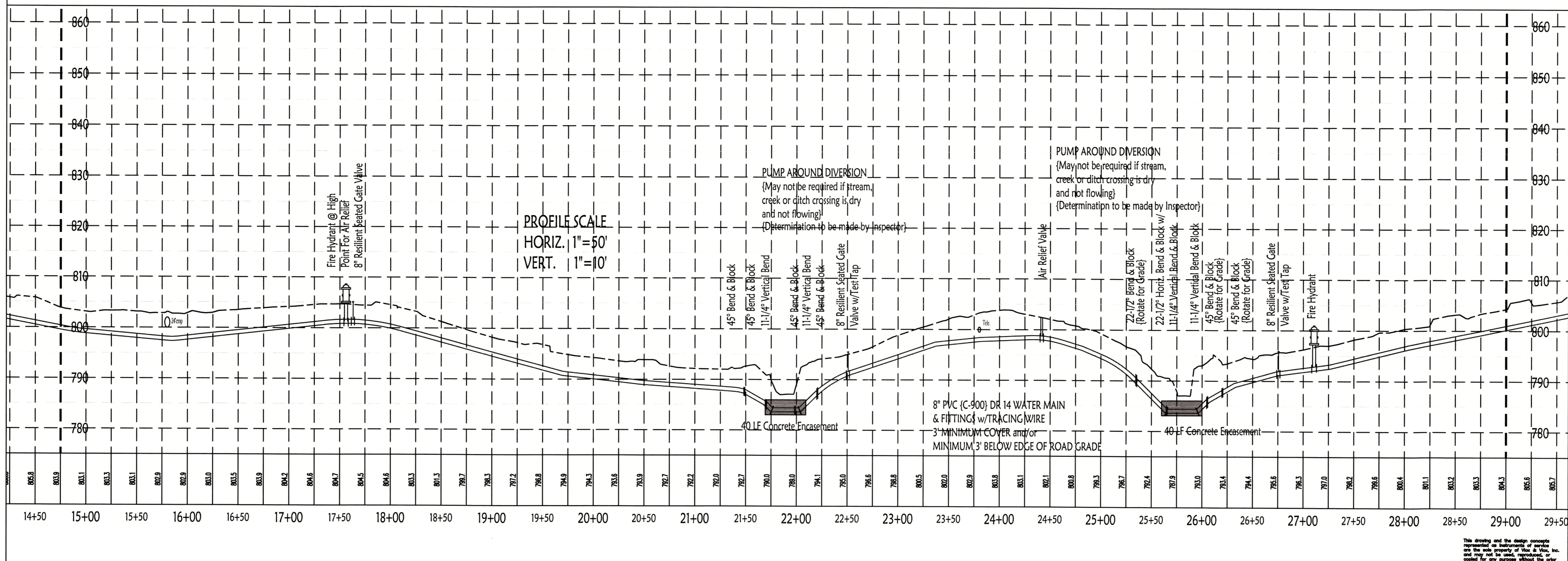
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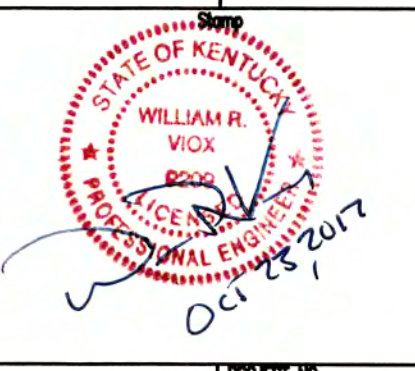
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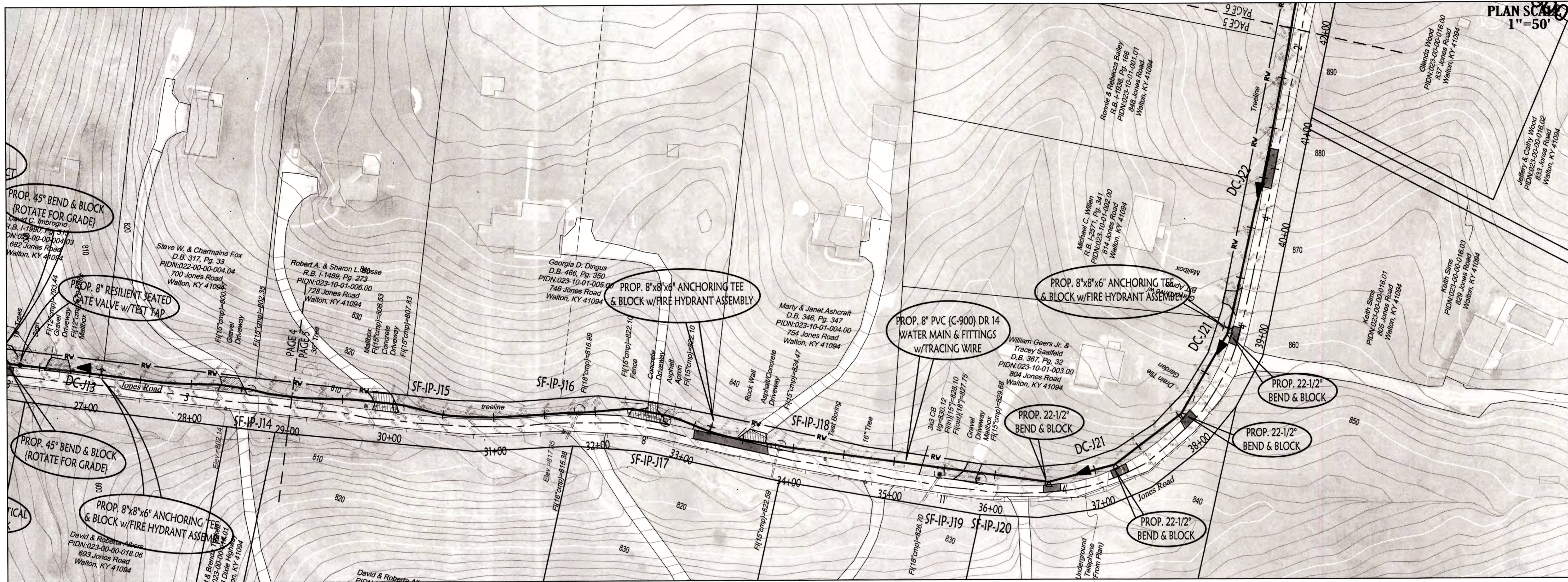
NO.	REVISION

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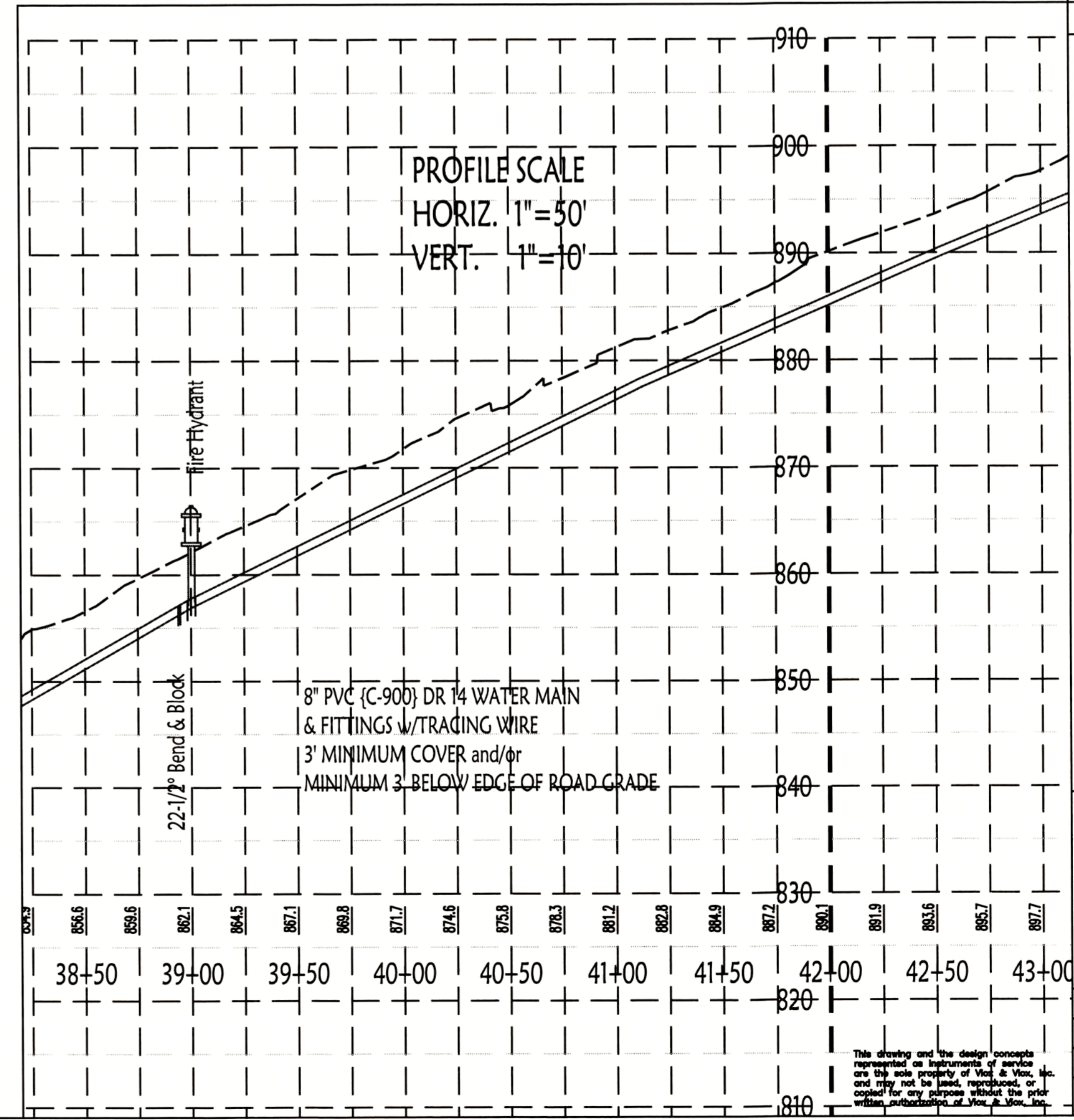
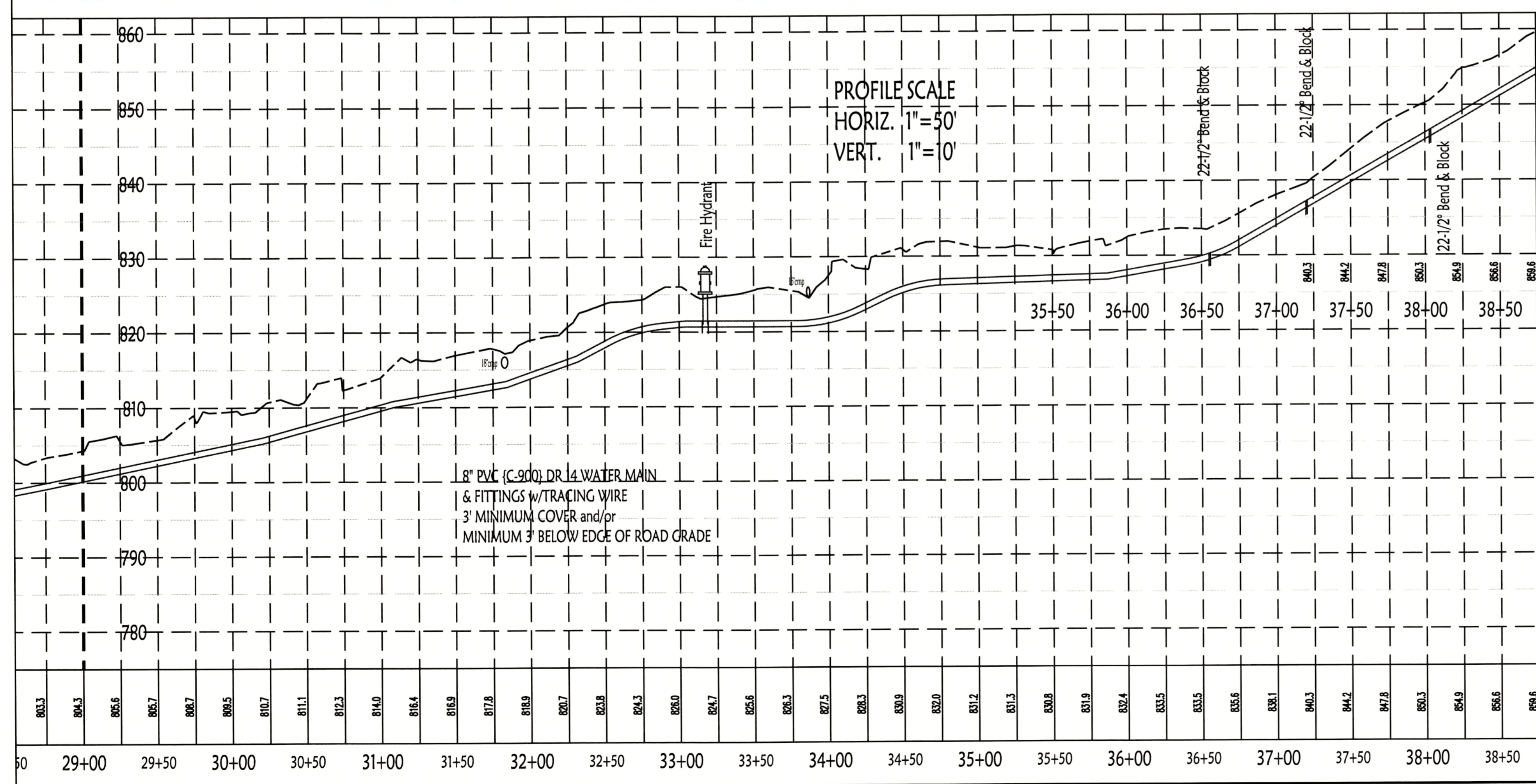
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SCALE: as shown	DATE: 7/5/11
DRIVING: SKW/D005/Sub-District FRPP110000/Engineering	DATE: 7/5/11
DWG: SKW/D005/Sub-District FRPP110000/Engineering	DATE: 7/5/11

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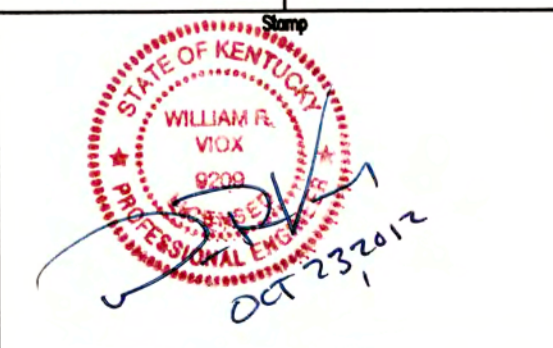
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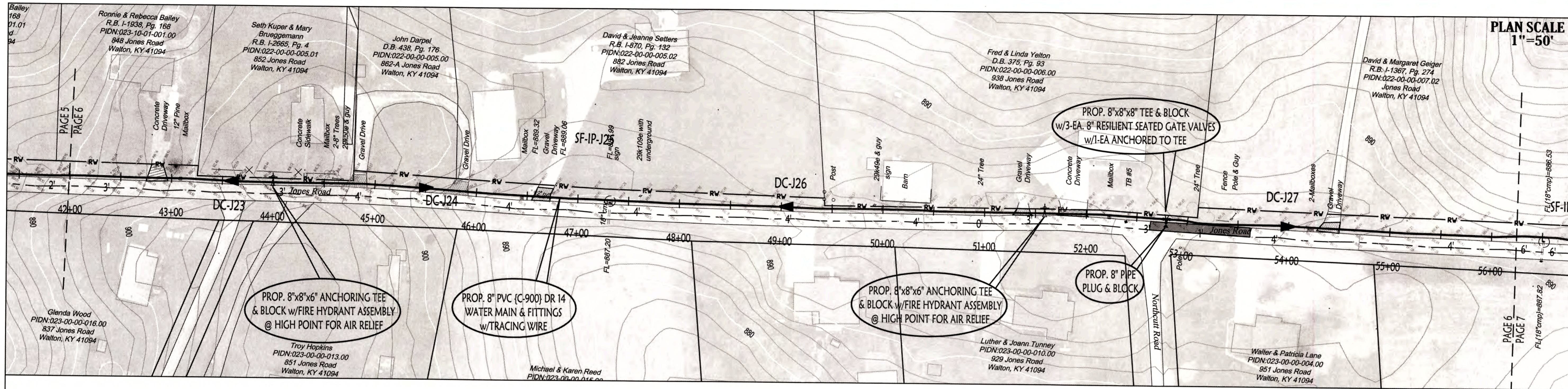


Civil Engineers, Surveyors, and Landscape Architects
466 Estinger Road • Ellettsville, Kentucky 40118
Ph: (859) 727-5253 • Fax: (859) 727-8452 • www.vioxinc.com



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DATE	7/5/11		
DRAWING: NW WD008/Sub-District 1 RPT 111008/Engineering/ DWG008WD-Jones.dwg			
Page 5			

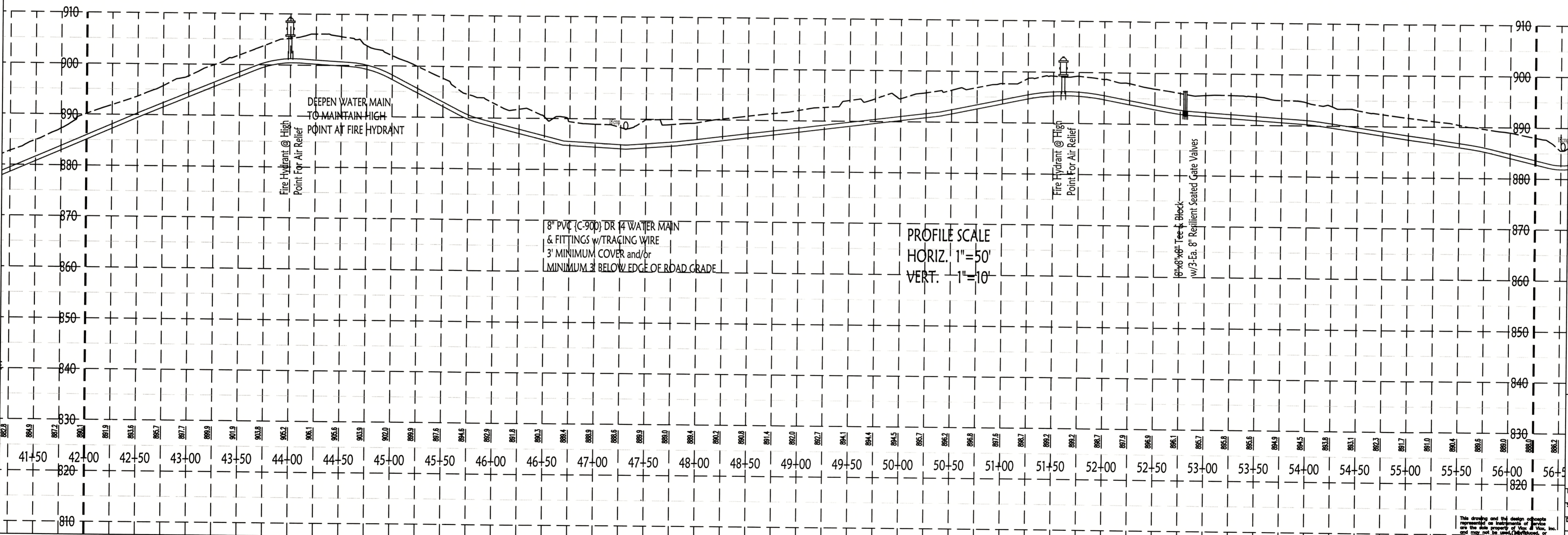
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PLAN SCALE
1"=50'

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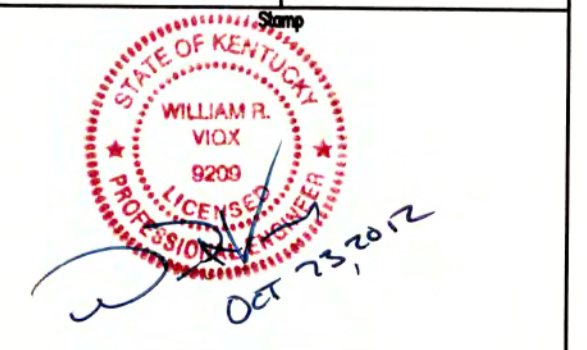


PROFILE SCALE
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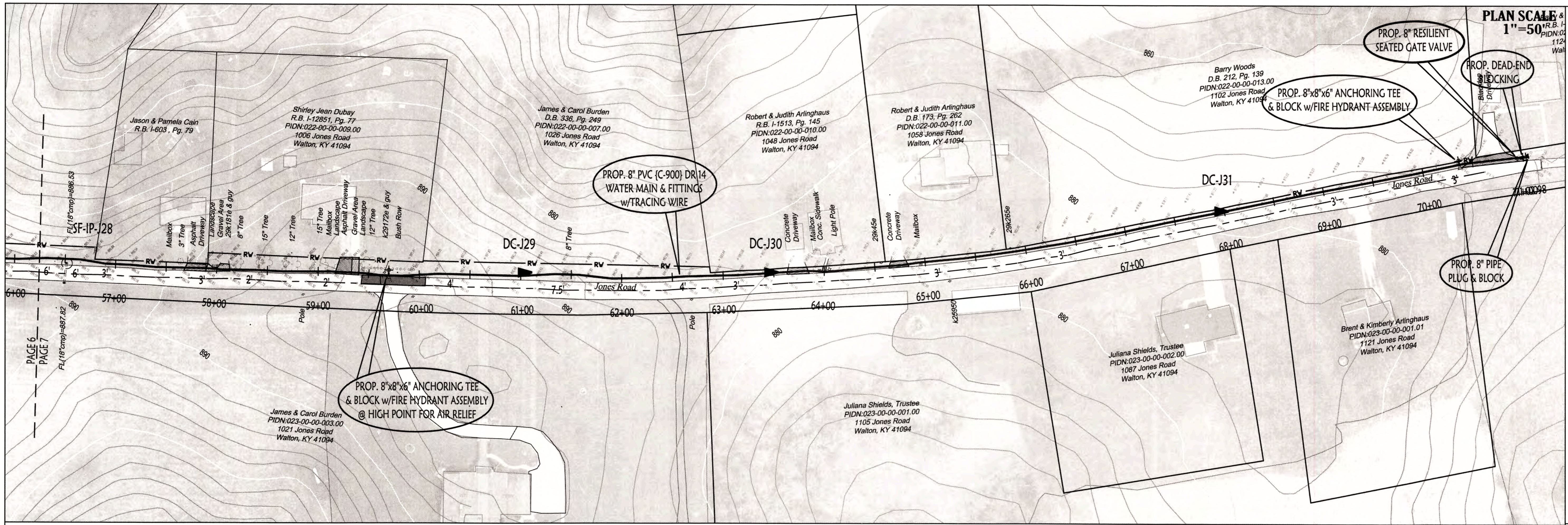


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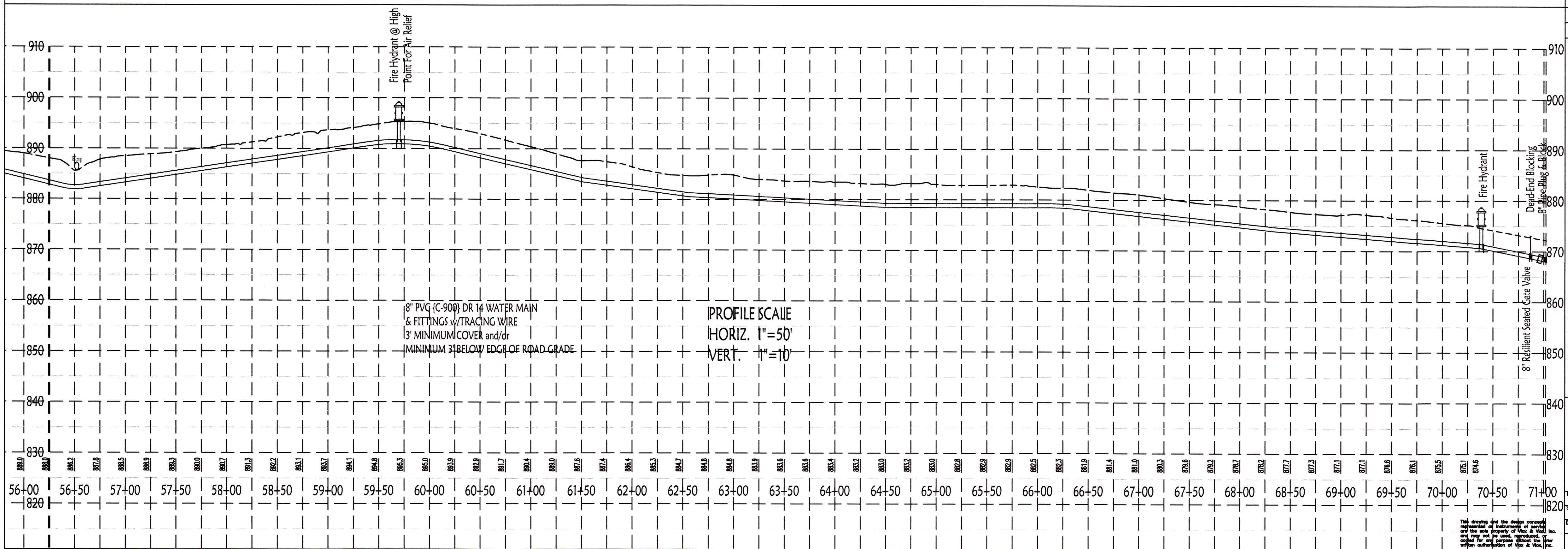
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DATE: 7/5/11	
DRAWING NO.: DWG110002 (Engineering)	

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REVISIONS

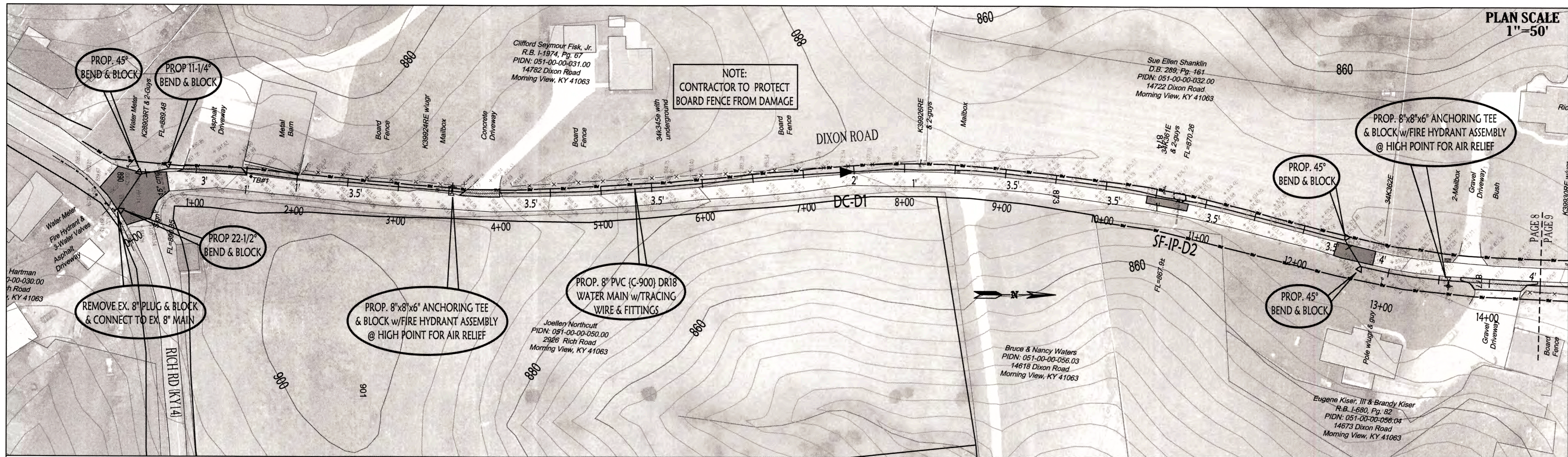
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WALTON, KENTON COUNTY, KENTUCKY**

W VIOX & VIOX
Civil Engineers, Surveyors, and Landscape Architects
466 Erlanger Road • Erlanger, Kentucky 41018
Ph: (859) 727-3993 • Fax: (859) 727-8452 • www.vioxinc.com

Stamp: WILLIAM R. VIOX, Professional Engineer, State of Kentucky, No. 10051, Exp. 12/31/11

DATE: 7/5/11
PROJECT NO: 100-511-003
DRAWN BY: JHV/mae
CHECKED BY: [Signature]

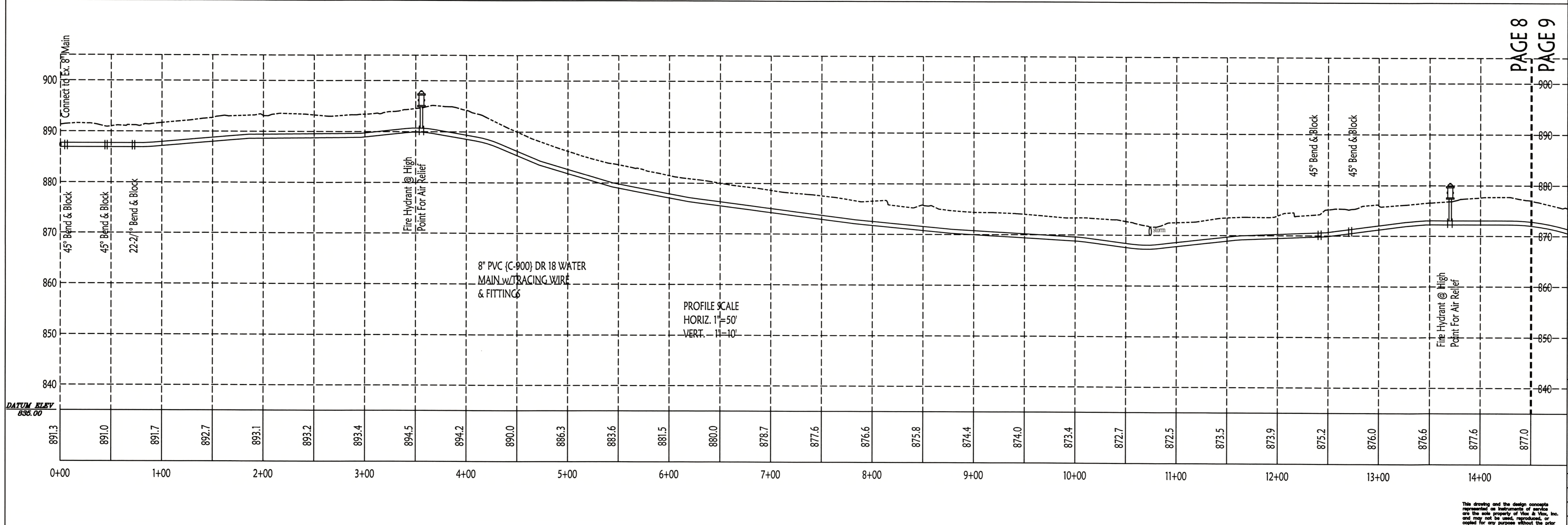
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PLAN SCALE
1"=50'

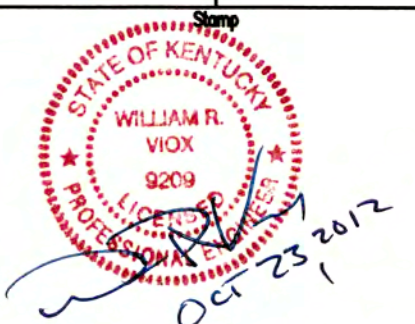
EPSC LEGEND	
SF-IP	SILT FENCE INLET PROTECTION
▲	DITCH CHECK
--SF--	SILT FENCE

- EROSION CONTROL NOTES:
- EXISTING VEGETATION SHALL BE PRESERVED WHERE POSSIBLE. ALL DISTURBED AREAS OF THE SITE SHALL BE STABILIZED. STABILIZATION SHALL BEGIN WITHIN 14 DAYS ON AREAS OF THE SITE WHERE CONSTRUCTION ACTIVITIES HAVE PERMANENTLY OR TEMPORARILY (FOR 21 DAYS OR MORE) CEASED. WHEN SNOW COVER CAUSES DELAYS, STABILIZATION SHALL BEGIN AS SOON AS POSSIBLE.
 - CONTRACTOR SHALL INSPECT THE BMP'S AT LEAST EVERY 7 DAYS AND AFTER A RAIN EVENT OF 0.5" AND GREATER.
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 - INSPECTION OF BMP'S SHALL BE PERFORMED ON A WEEKLY BASIS BY A KSPC CERTIFIED INSPECTOR.

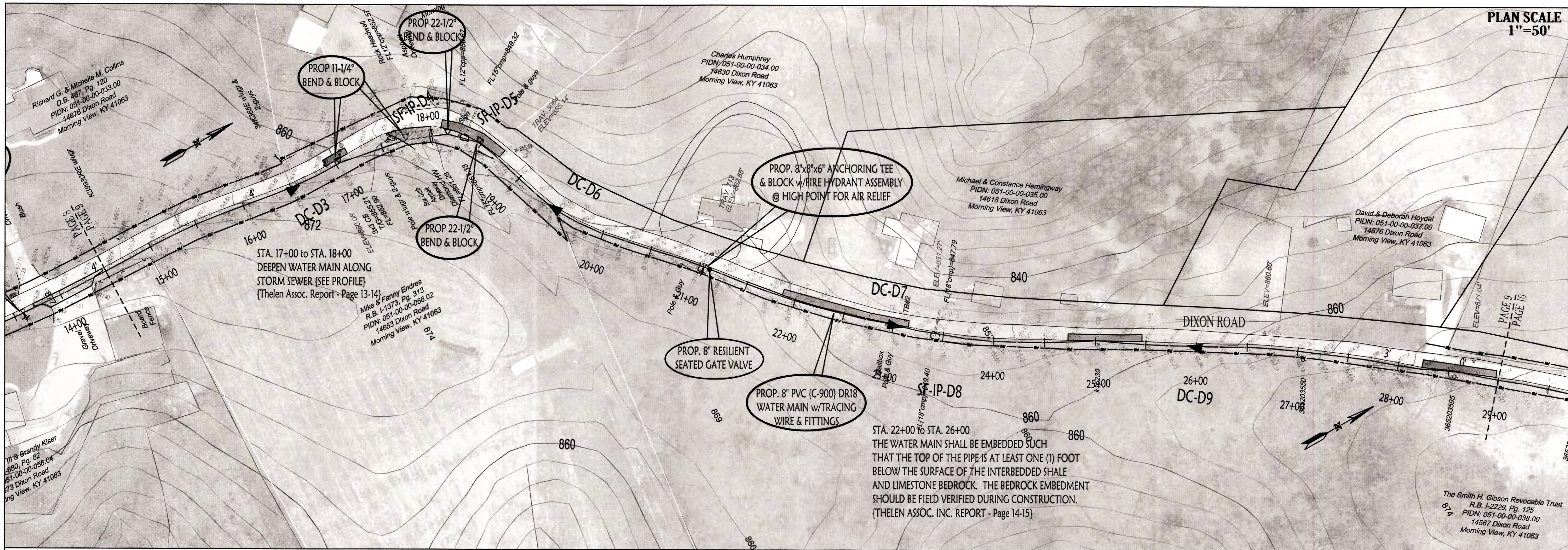


PAGE 8
PAGE 9

PROPOSED 8" WATER MAIN
DIXON ROAD
KENTON COUNTY, KENTUCKY

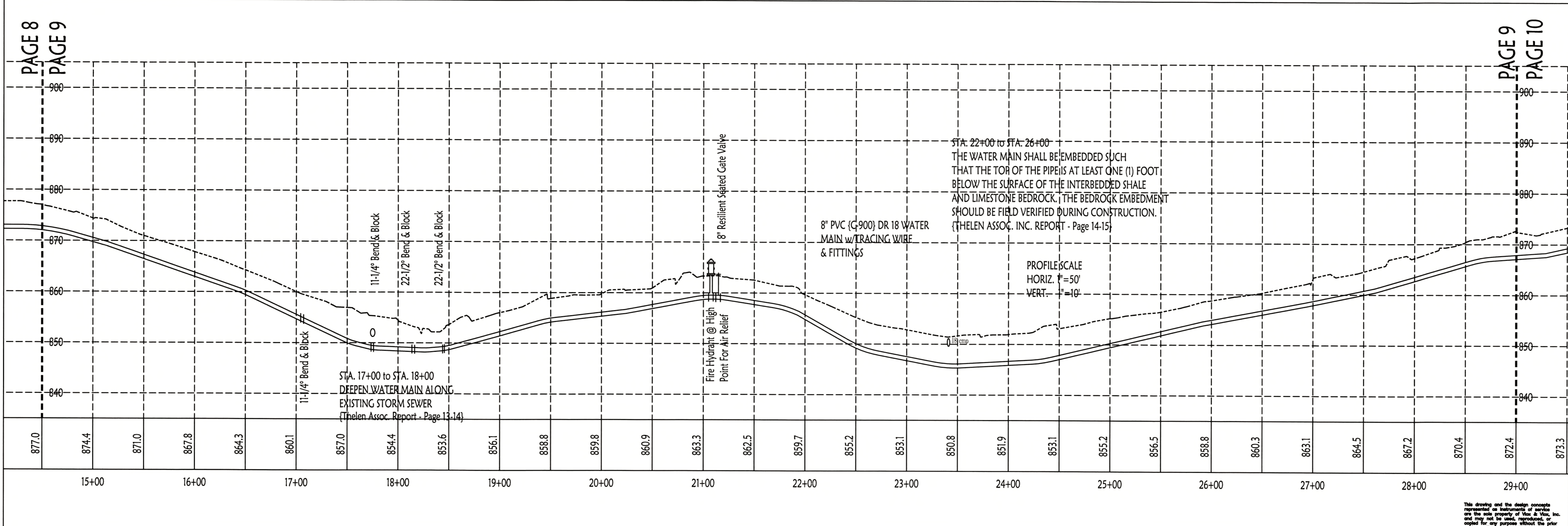


REV	DATE	PROJECT NO.
1	7/6/11	105-511-003
SCALE		DATE
AS SHOWN		7/6/11
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EPSC LEGEND	
SF-IP	SILT FENCE INLET PROTECTION
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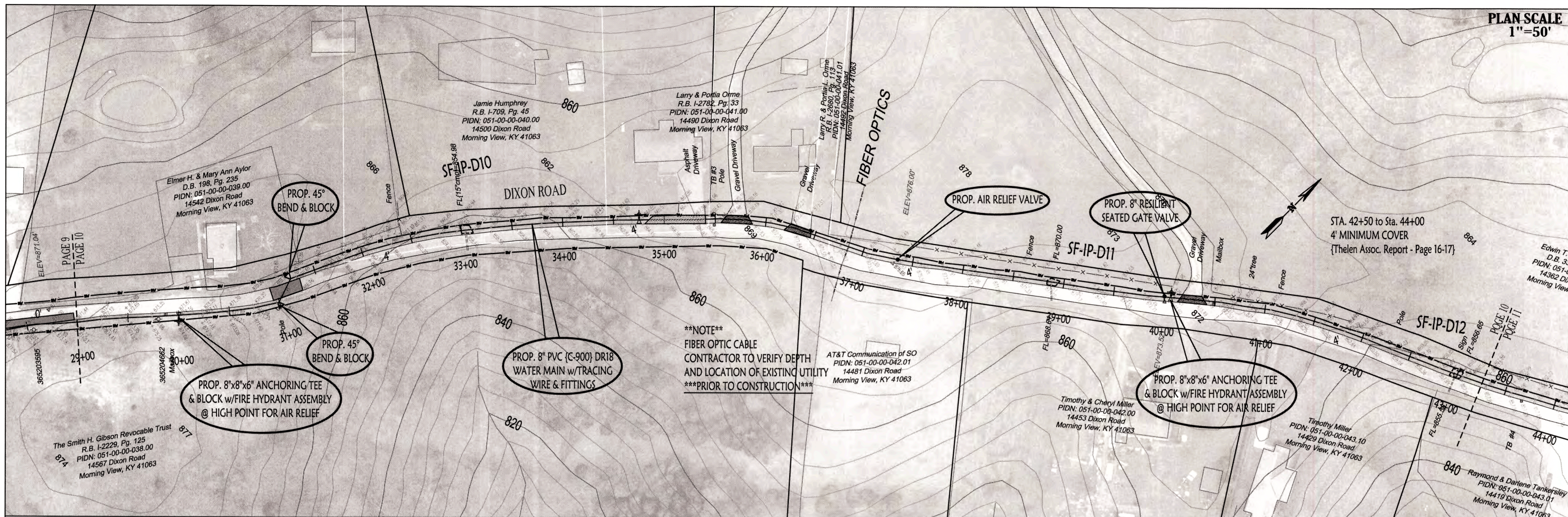
PROPOSED 8" WATER MAIN
DIXON ROAD
KENTON COUNTY, KENTUCKY

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466 Ellinger Road • Ellinger, Kentucky 41018
Ph: (606) 727-5255 • Fax: (606) 727-5462 • www.wiox.com

STATE OF KENTUCKY
WILLIAM R. VIOX
Professional Engineer
No. 10051
Exp. 12/31/22

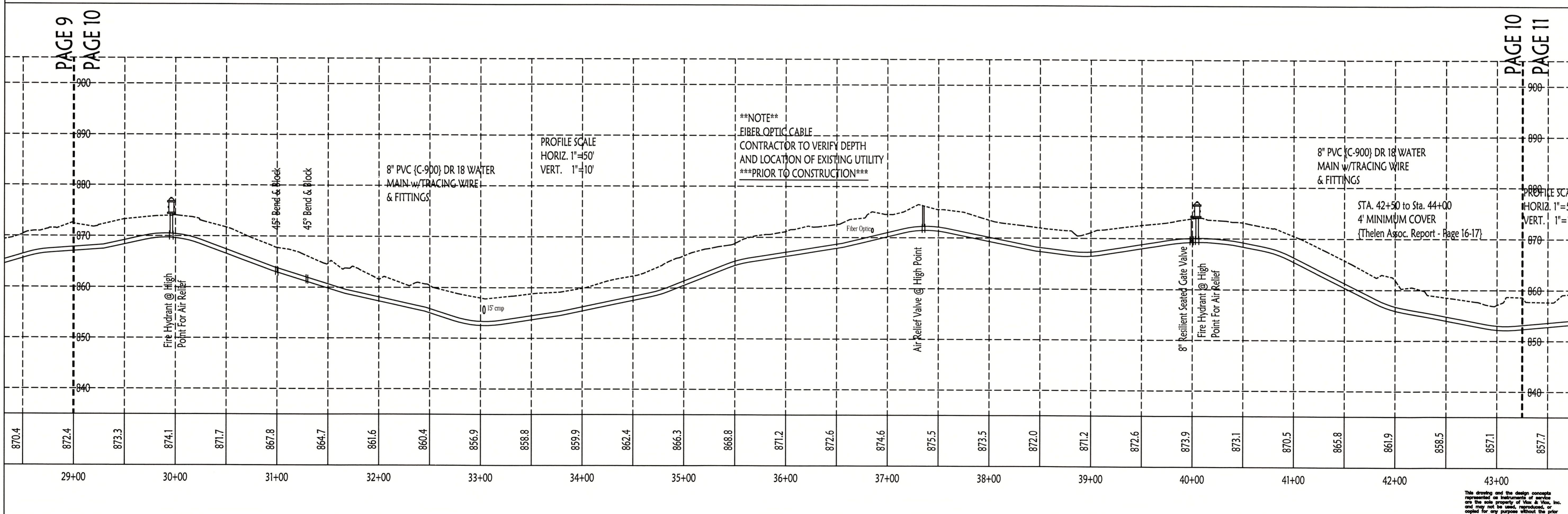
DATE: 7/6/11
PROJECT NO: 100-511-003
SCALE: AS SHOWN

PK:WD:0051103:Sub-District:REP:1100:Engineering:DWG:PK:WD-Drawing
Page 9



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▲	DITCH CHECK
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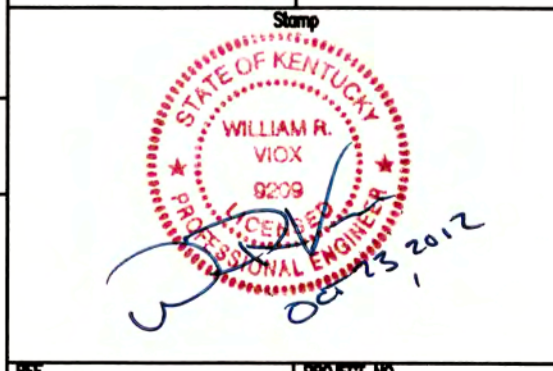
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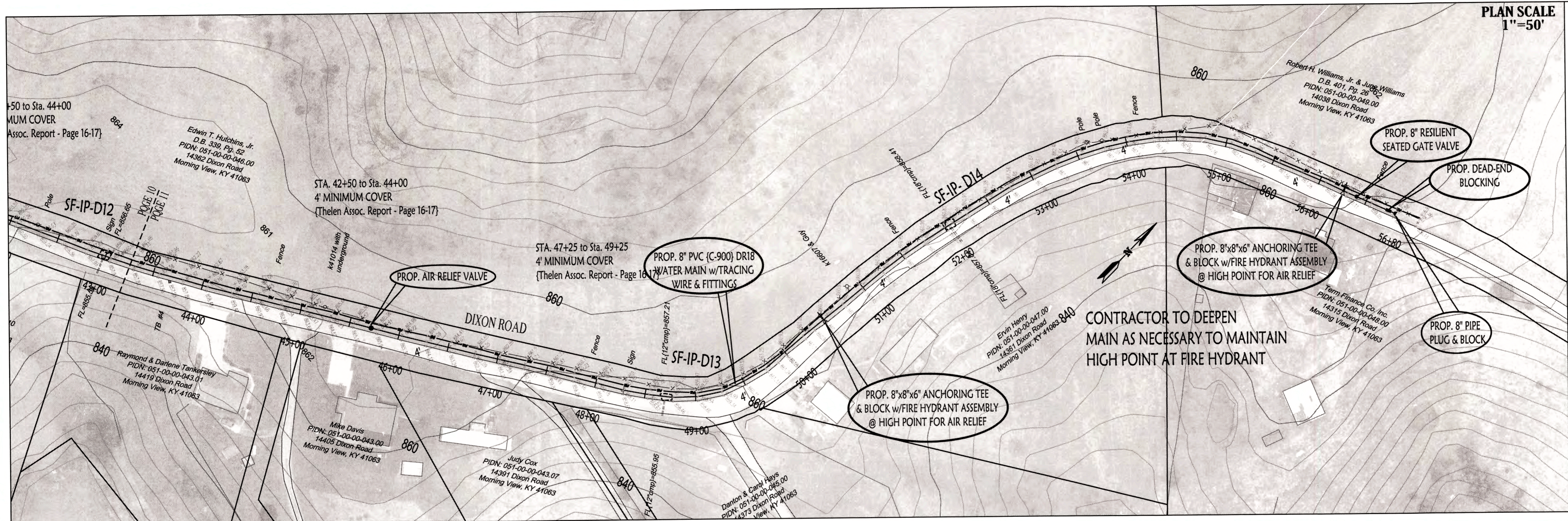
REVISIONS

**PROPOSED 8" WATER MAIN
DIXON ROAD
KENTON COUNTY, KENTUCKY**

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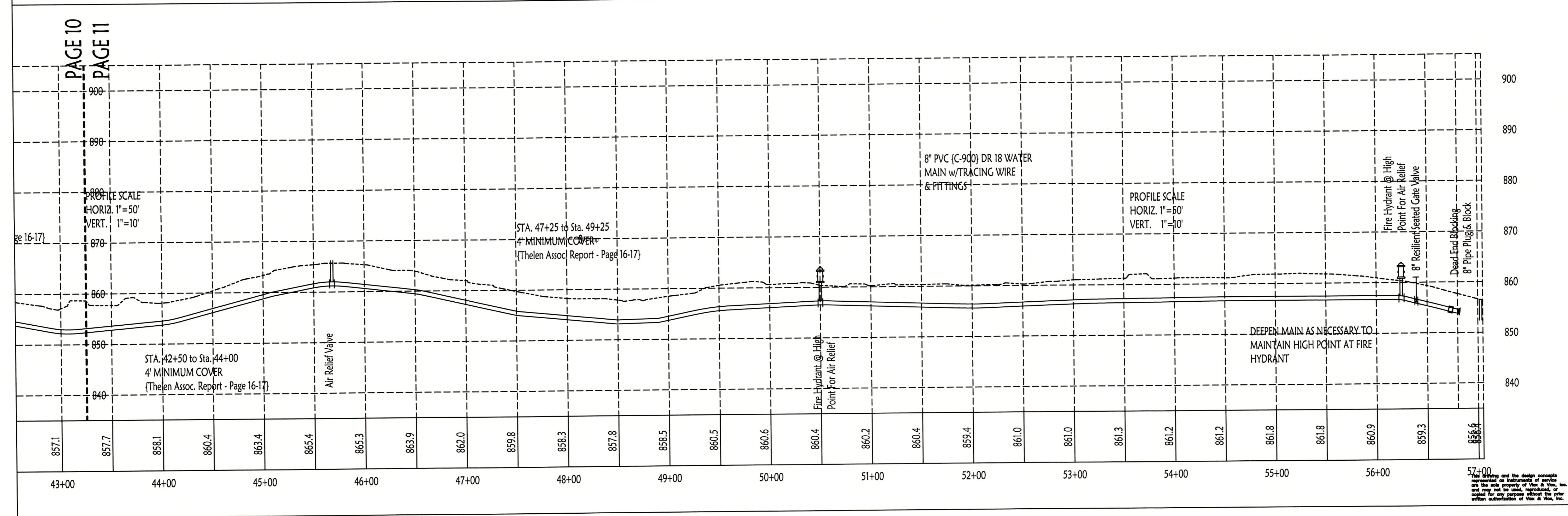
DESIGNER: JHV/mse	PROJECT NO.: 102-511-003
SCALE: AS SHOWN	DATE: 7/6/11
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PLAN SCALE
1"=50'

EPSC LEGEND	
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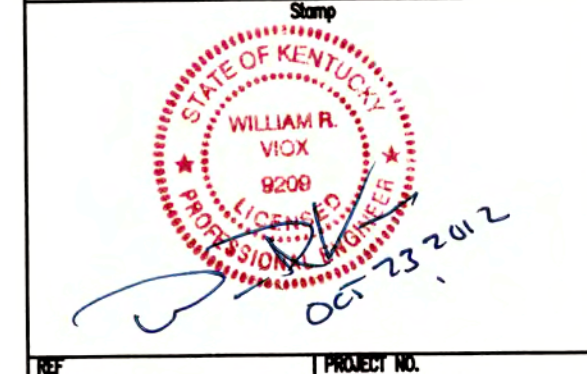
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REVISIONS

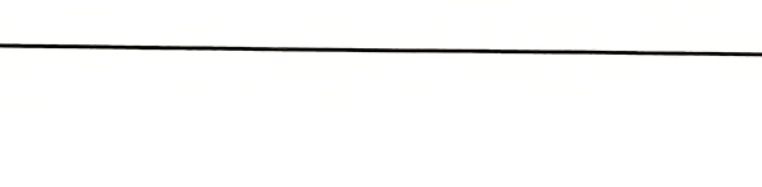
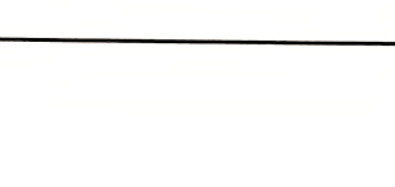
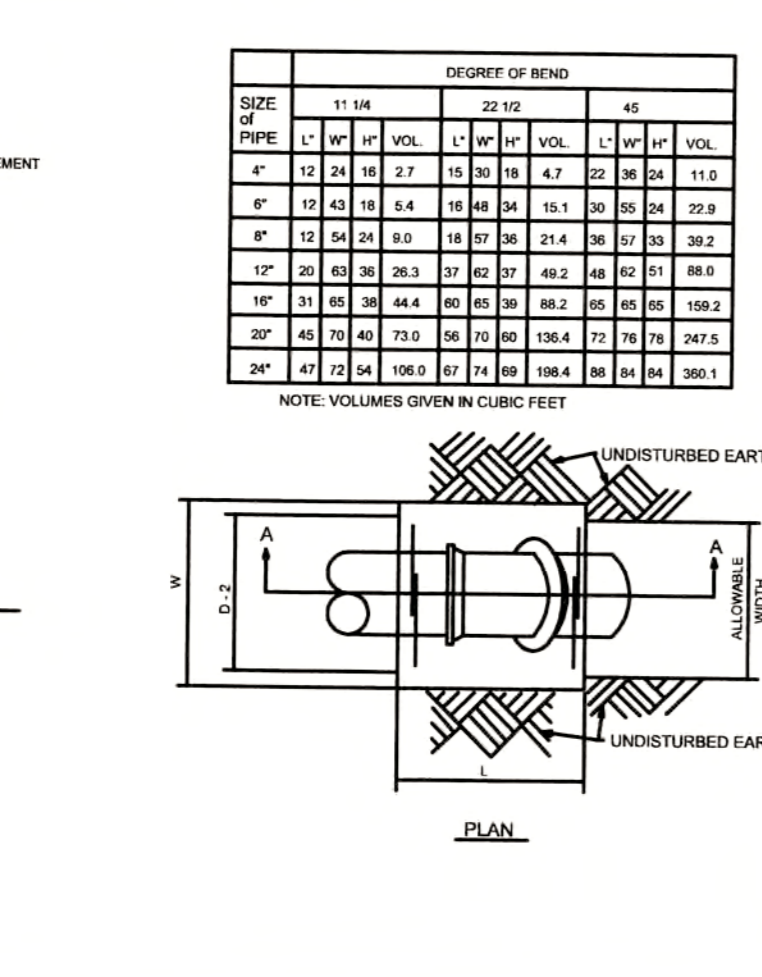
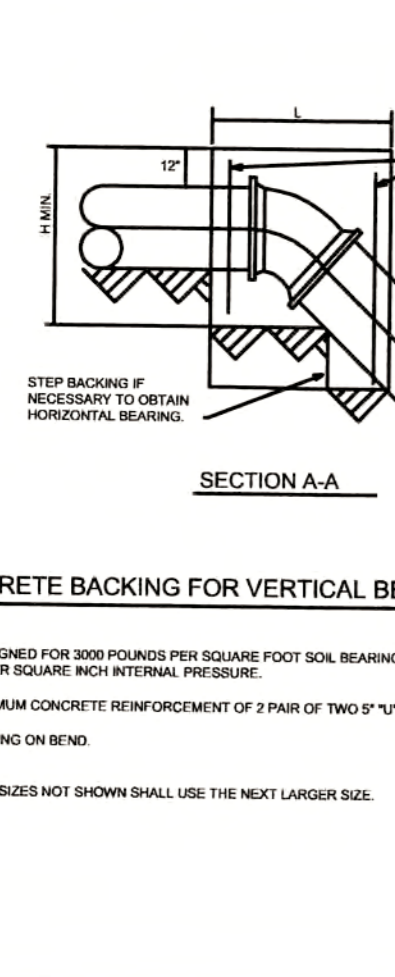
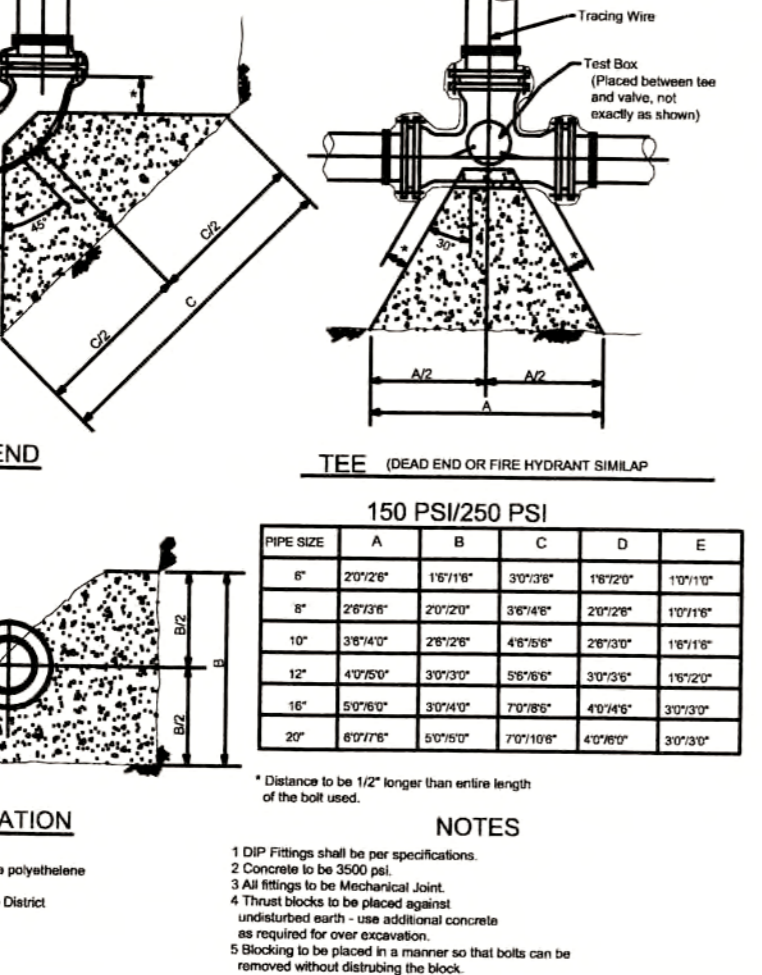
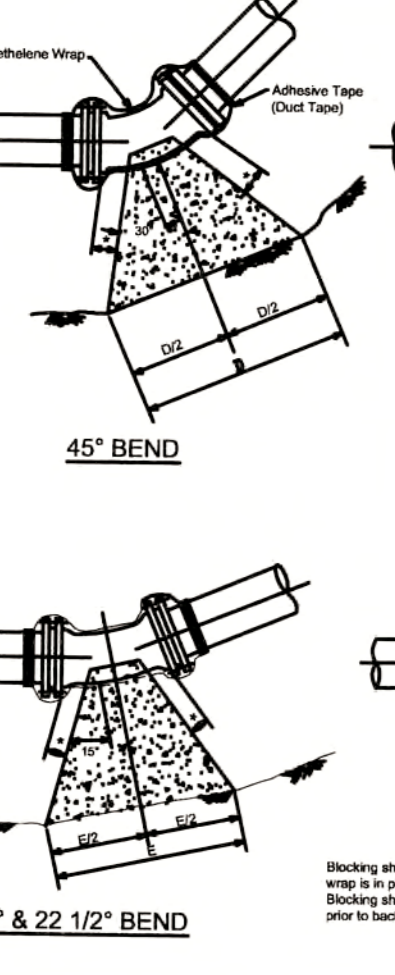
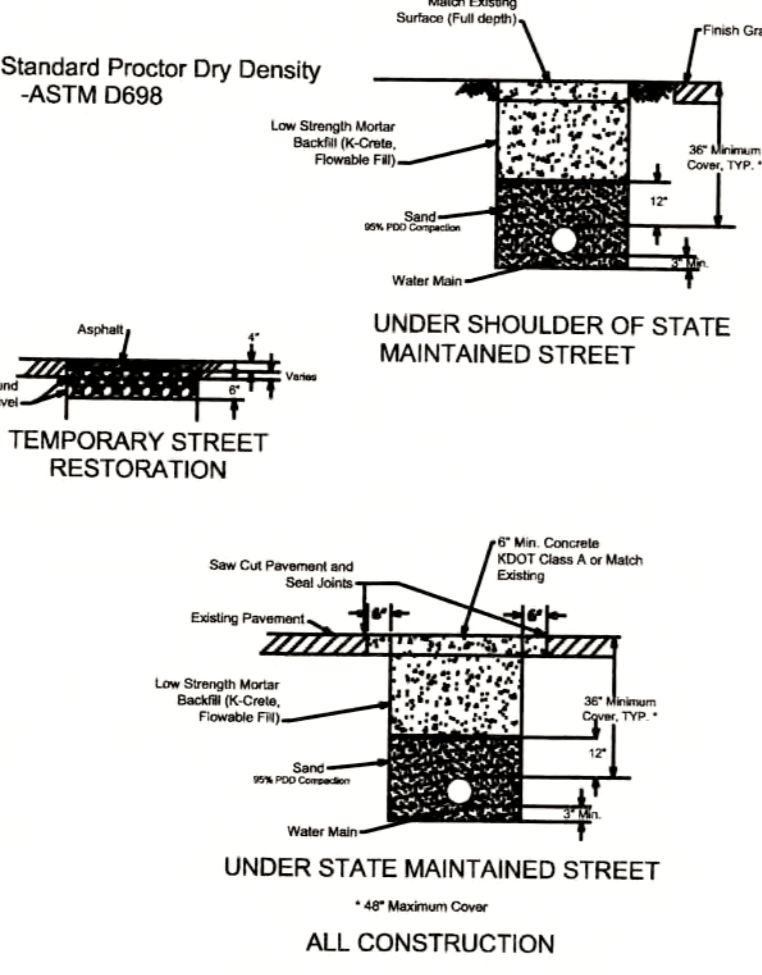
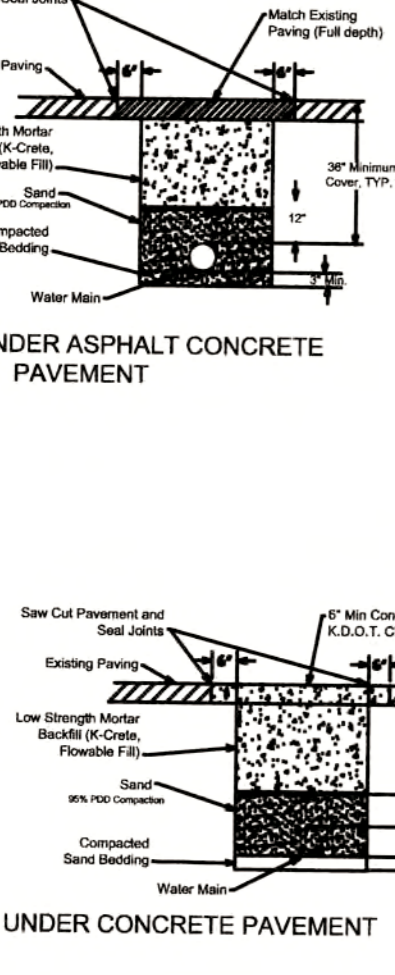
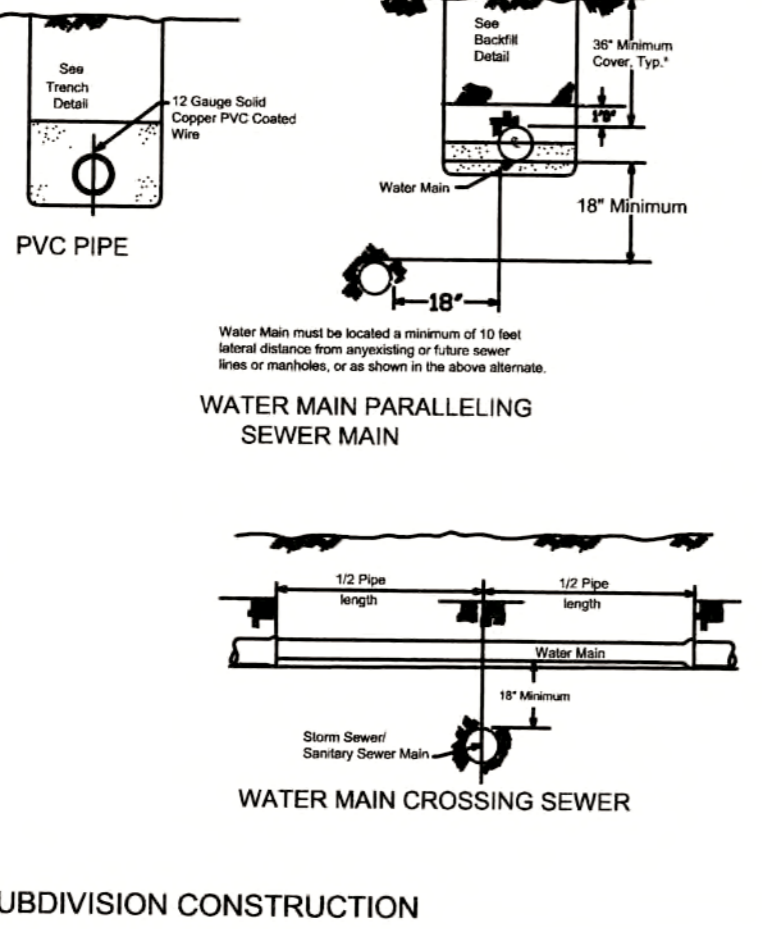
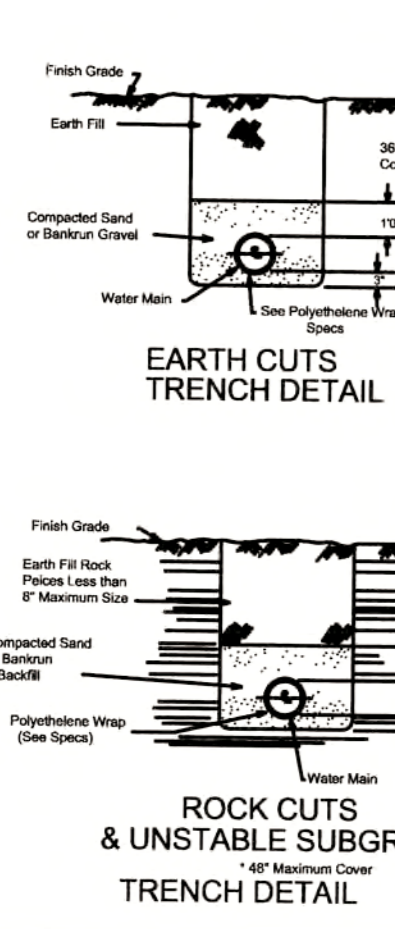
**PROPOSED 8" WATER MAIN
DIXON ROAD
KENTON COUNTY, KENTUCKY**

VIOX & VIOX
Civil Engineers, Surveyors, and Landscape Architects
468 Erlanger Road • Erlanger, Kentucky 41018
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DATE: 07/11/2024	PROJECT NO: 24-011-003
SCALE: AS SHOWN	DATE: 7/6/24
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Page 11



150 PSI/250 PSI				
SIZE	A	B	C	D
1/2"	1.18	1.31	1.44	1.57
3/4"	1.64	1.77	1.90	2.03
1"	2.10	2.23	2.36	2.49
1 1/4"	2.56	2.69	2.82	2.95
1 1/2"	3.02	3.15	3.28	3.41
2"	3.48	3.61	3.74	3.87
2 1/2"	3.94	4.07	4.20	4.33
3"	4.40	4.53	4.66	4.79
4"	5.32	5.45	5.58	5.71
6"	6.24	6.37	6.50	6.63
8"	7.16	7.29	7.42	7.55
10"	8.08	8.21	8.34	8.47
12"	9.00	9.13	9.26	9.39
14"	9.92	10.05	10.18	10.31
16"	10.84	10.97	11.10	11.23
18"	11.76	11.89	12.02	12.15
20"	12.68	12.81	12.94	13.07

DEGREE OF BEND				
PIPE SIZE	15°	30°	45°	60°
4"	12	24	36	48
6"	18	36	54	72
8"	24	48	72	96
10"	30	60	90	120
12"	36	72	108	144
14"	42	84	126	168
16"	48	96	144	192
18"	54	108	162	216
20"	60	120	180	240
24"	72	144	216	288

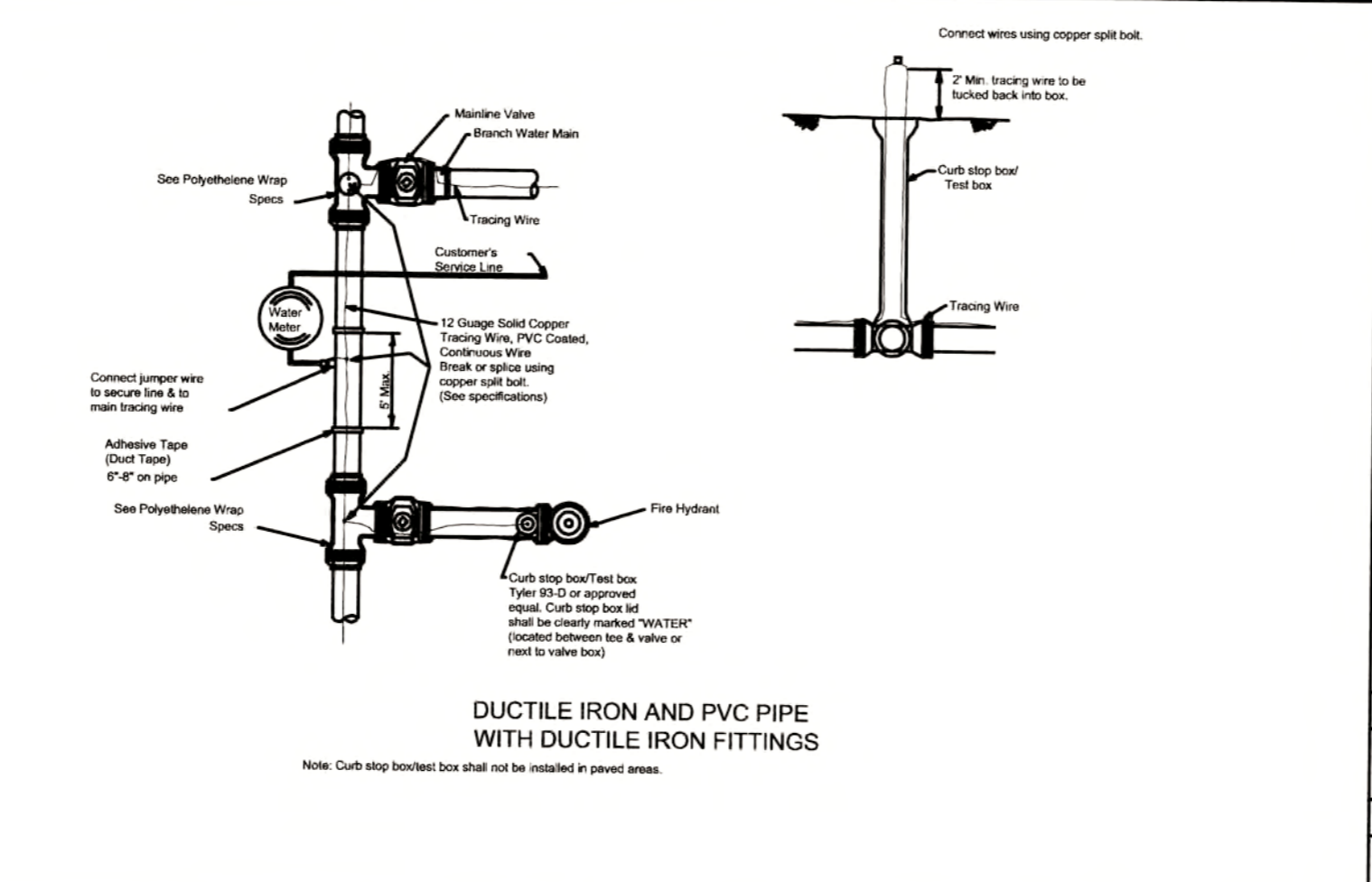
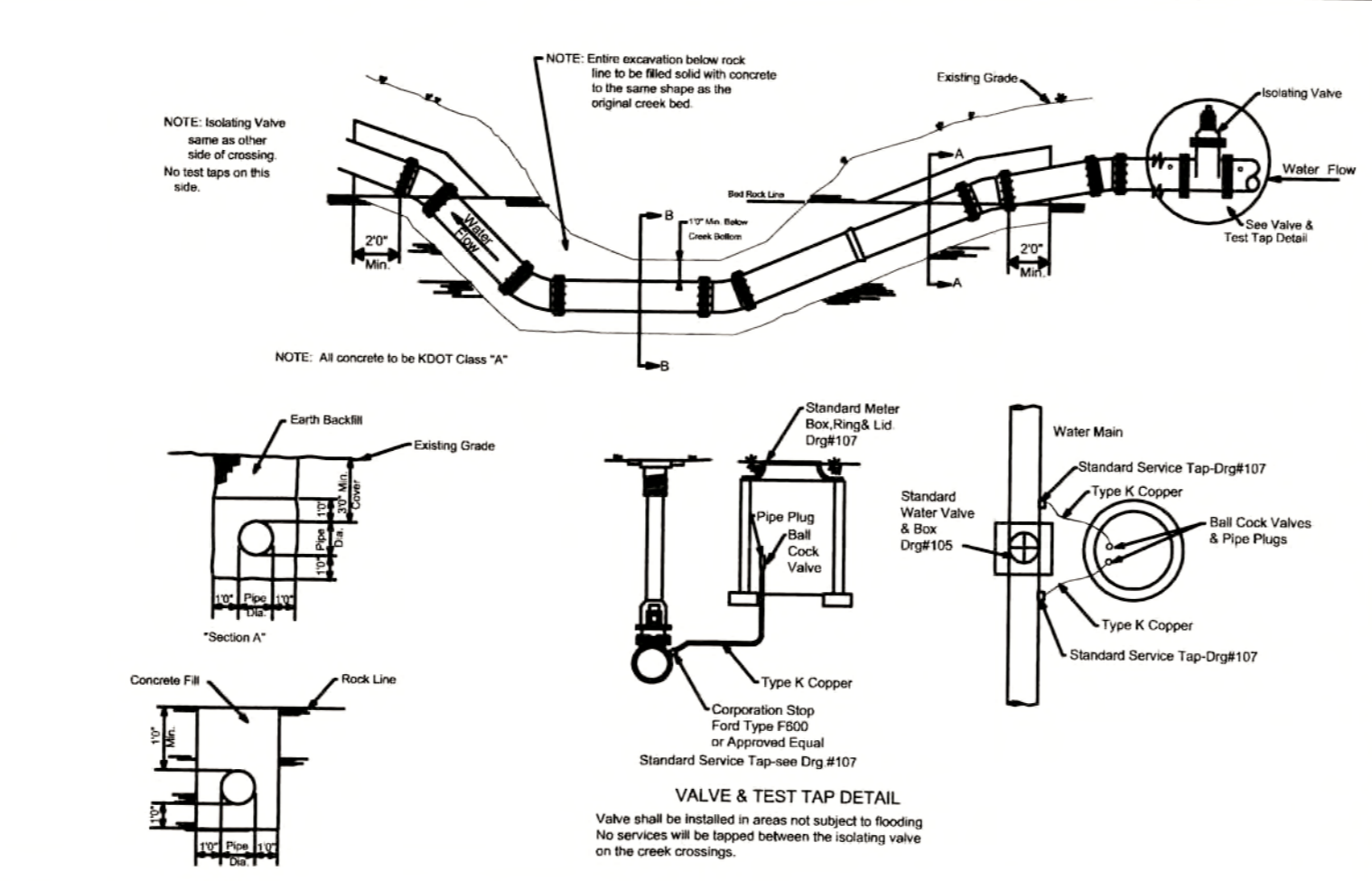
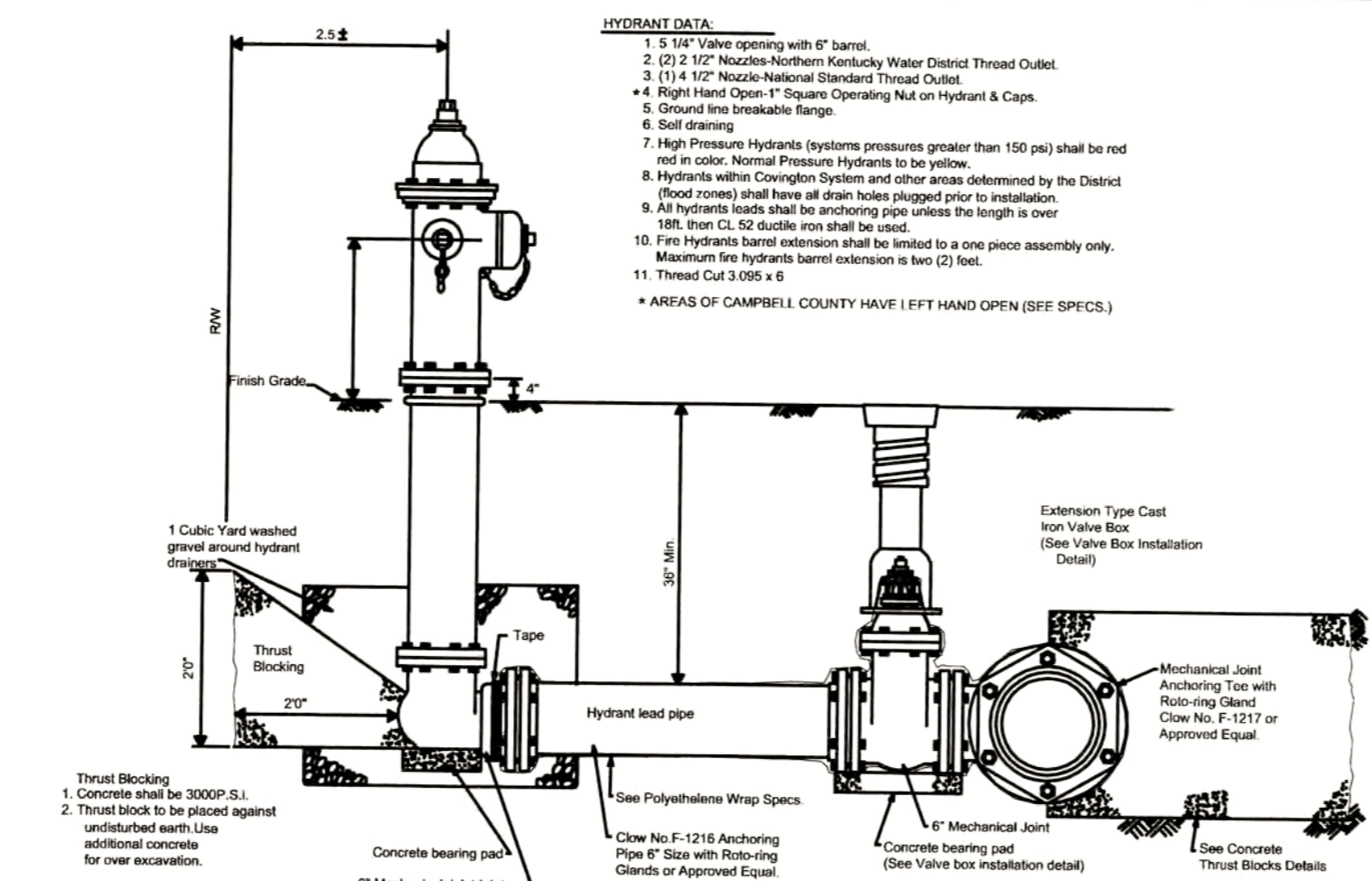
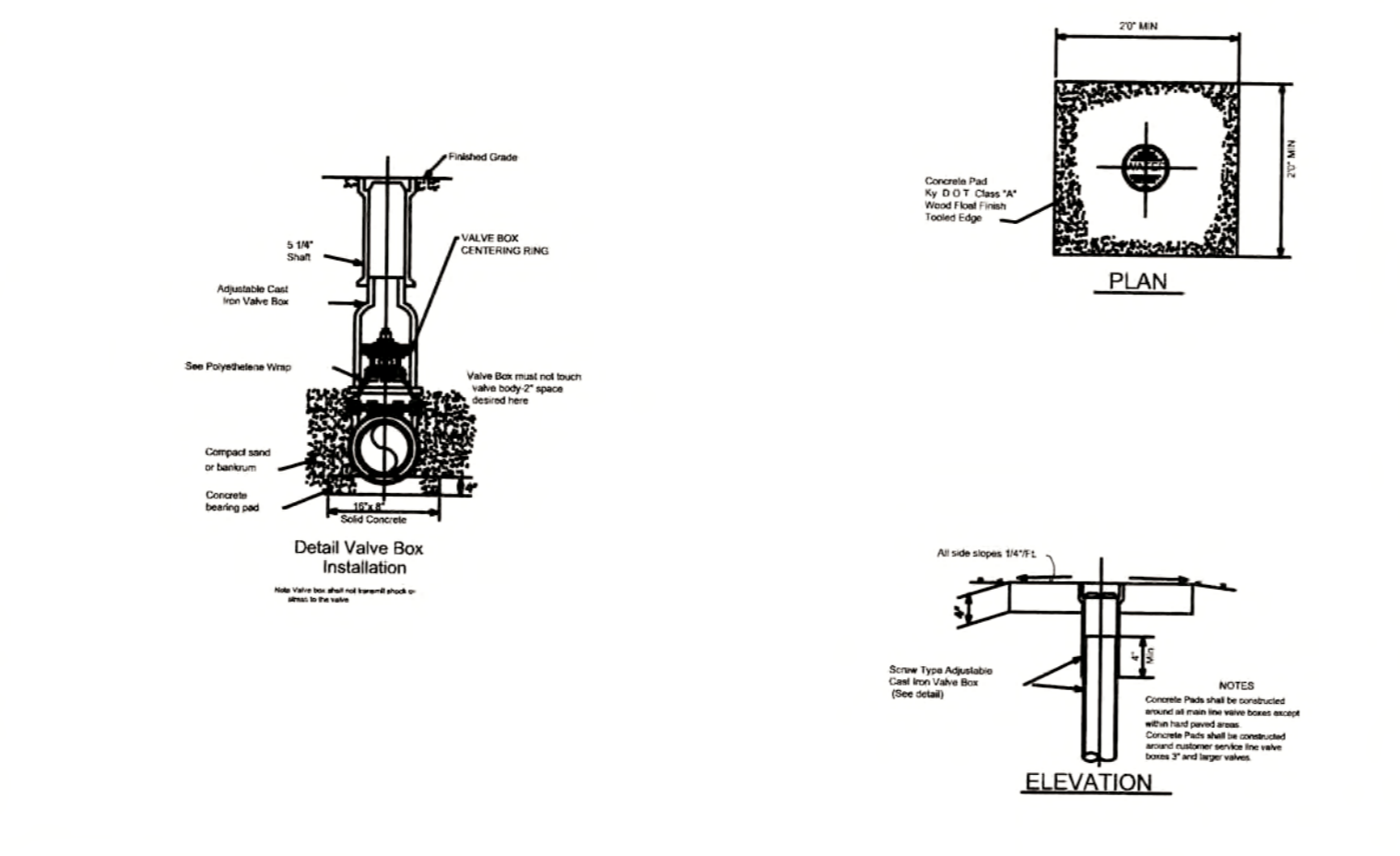
1. BACKING DESIGNED FOR 3000 POUNDS PER SQUARE FOOT SOIL BEARING AND 150 POUNDS PER SQUARE INCH INTERNAL PRESSURE.
 2. PROVIDE MINIMUM CONCRETE REINFORCEMENT OF 2" PAIR OF TWO #4 BARS @ 12" C.
 3. CENTER BACKING ON BEND.
 BLOCKING FOR SIZES NOT SHOWN SHALL USE THE NEXT LARGER SIZE.

N. KY. WATER DISTRICT TYPICAL PIPELINE TRENCH DETAIL
 DATE: 8/20/13
 DRAWING NO: 103

N. KY. WATER DISTRICT TYPICAL PIPELINE TRENCH DETAIL
 DATE: 8/20/13
 DRAWING NO: 103A

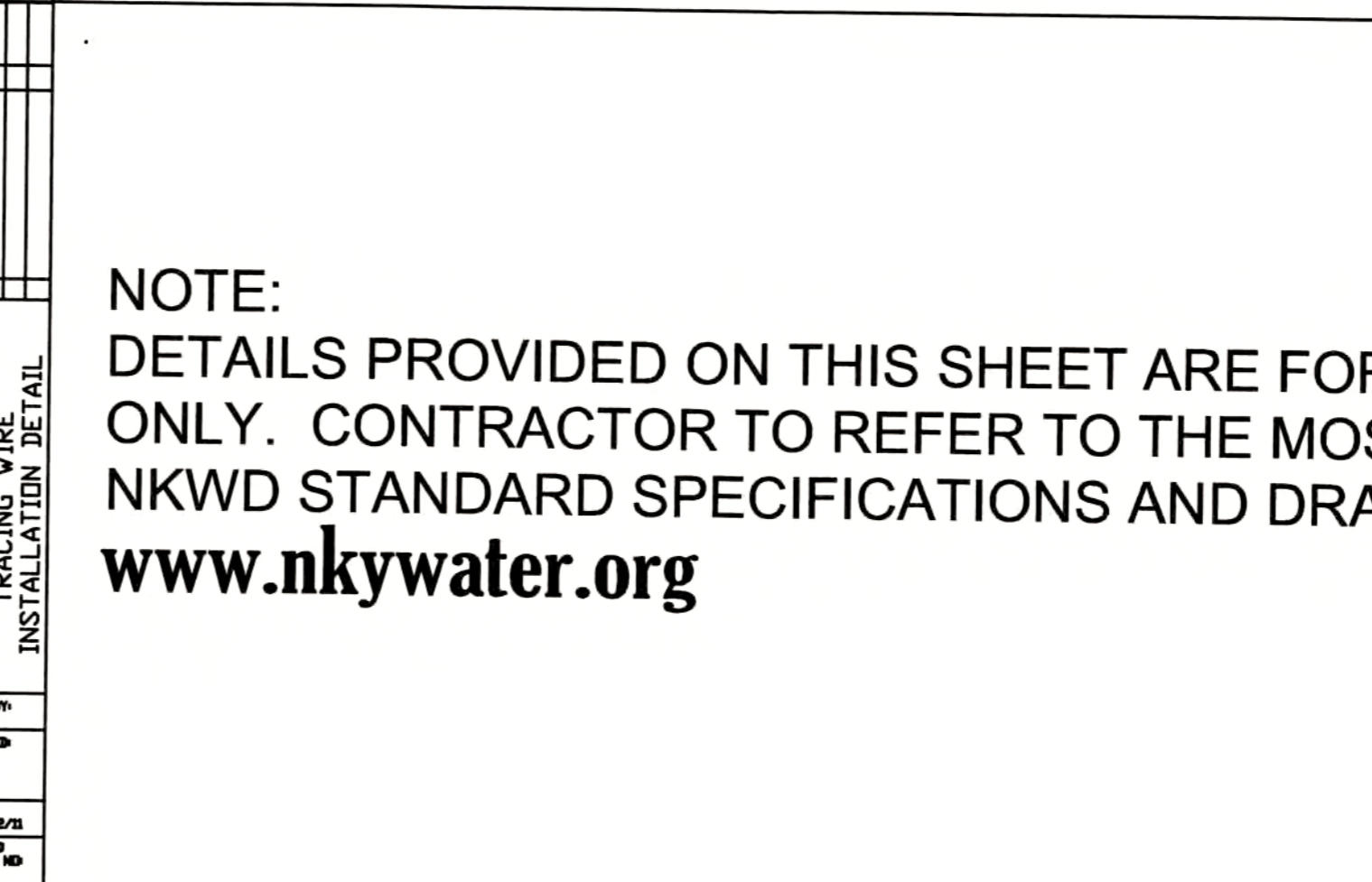
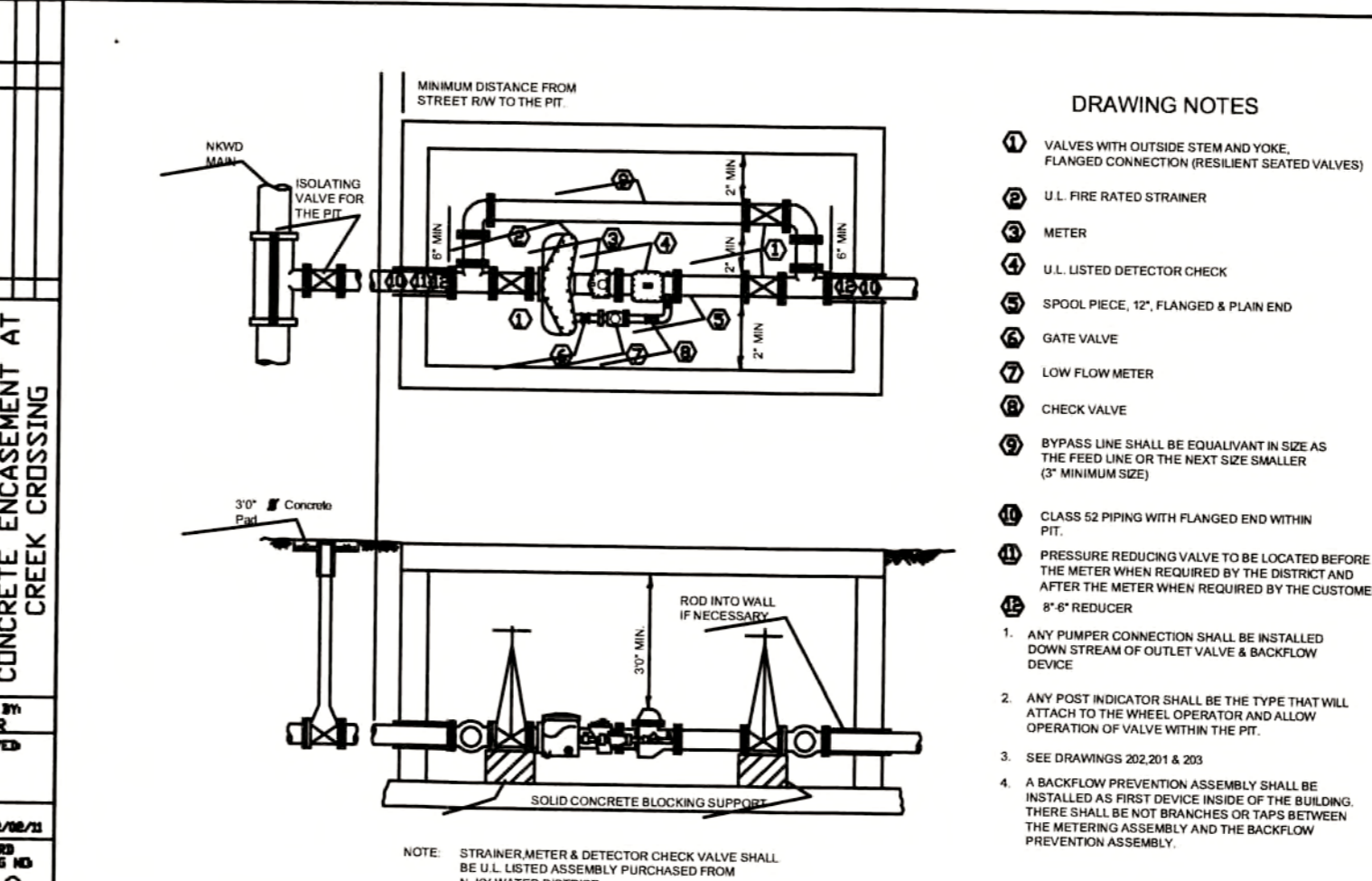
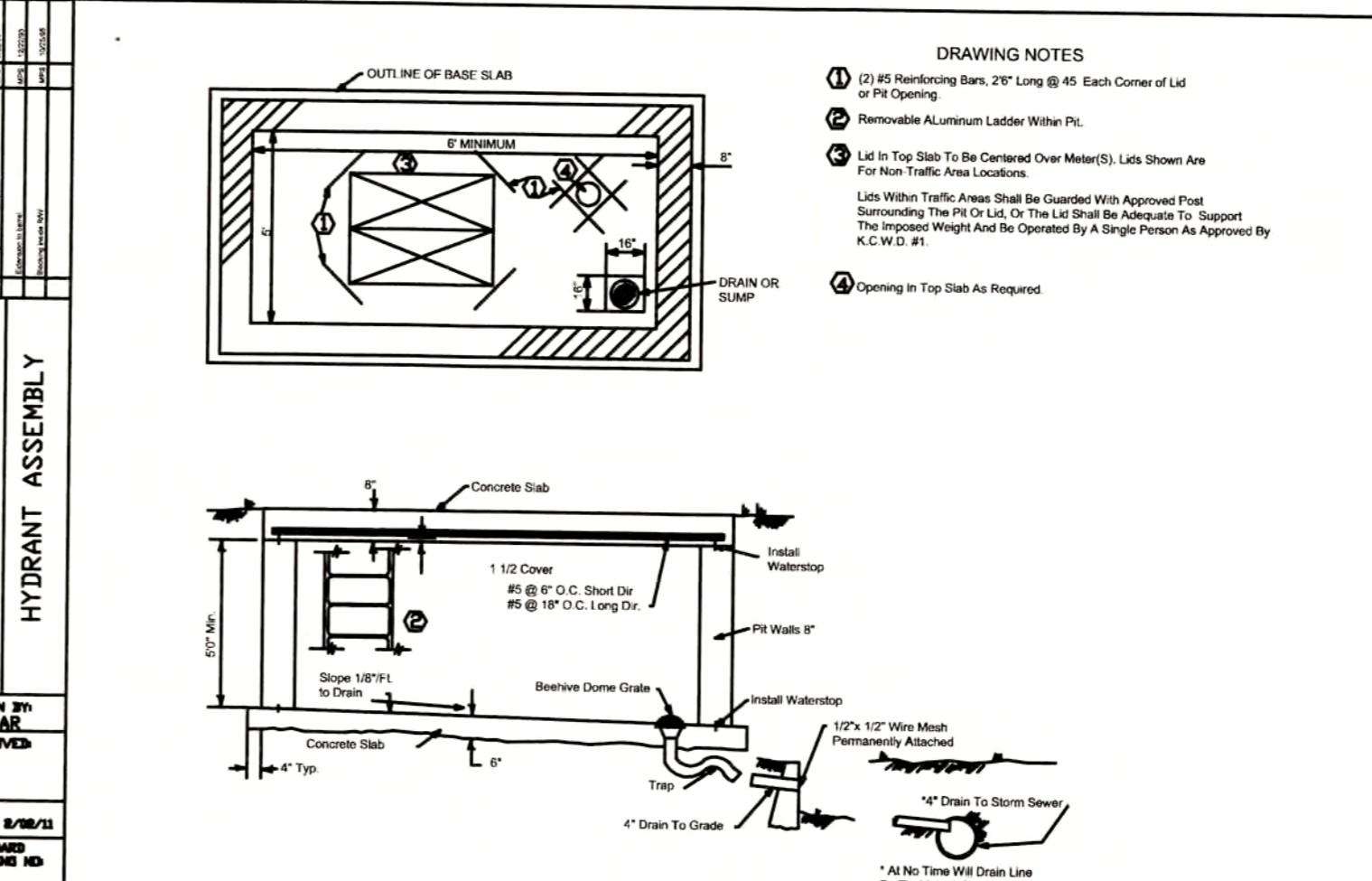
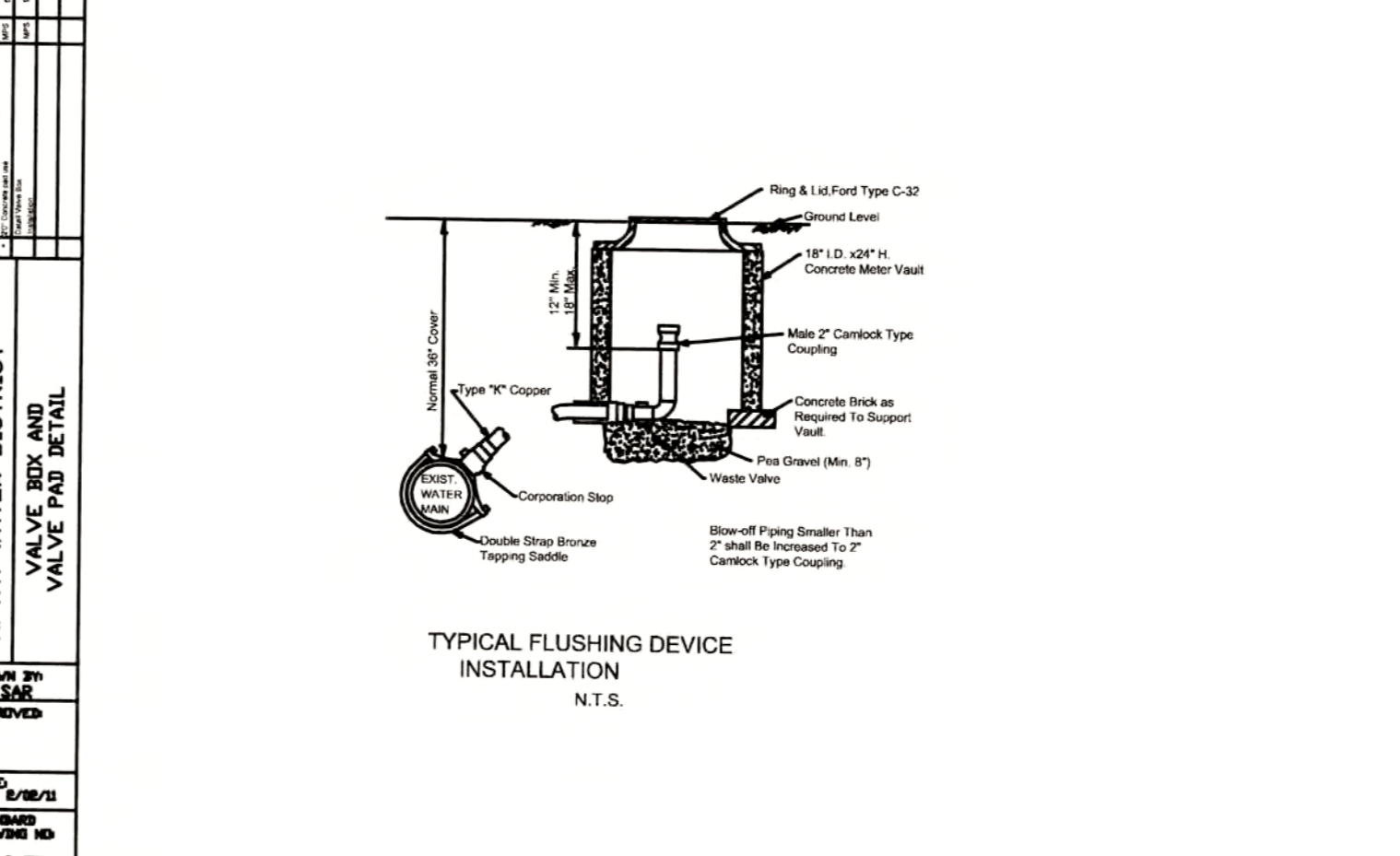
N. KY. WATER DISTRICT CONCRETE THURST BLOCK DETAIL
 DATE: 8/20/13
 DRAWING NO: 104

N. KY. WATER DISTRICT CONCRETE THURST BLOCKING FOR VERTICAL BENDS
 DATE: 8/20/13
 DRAWING NO: 104A



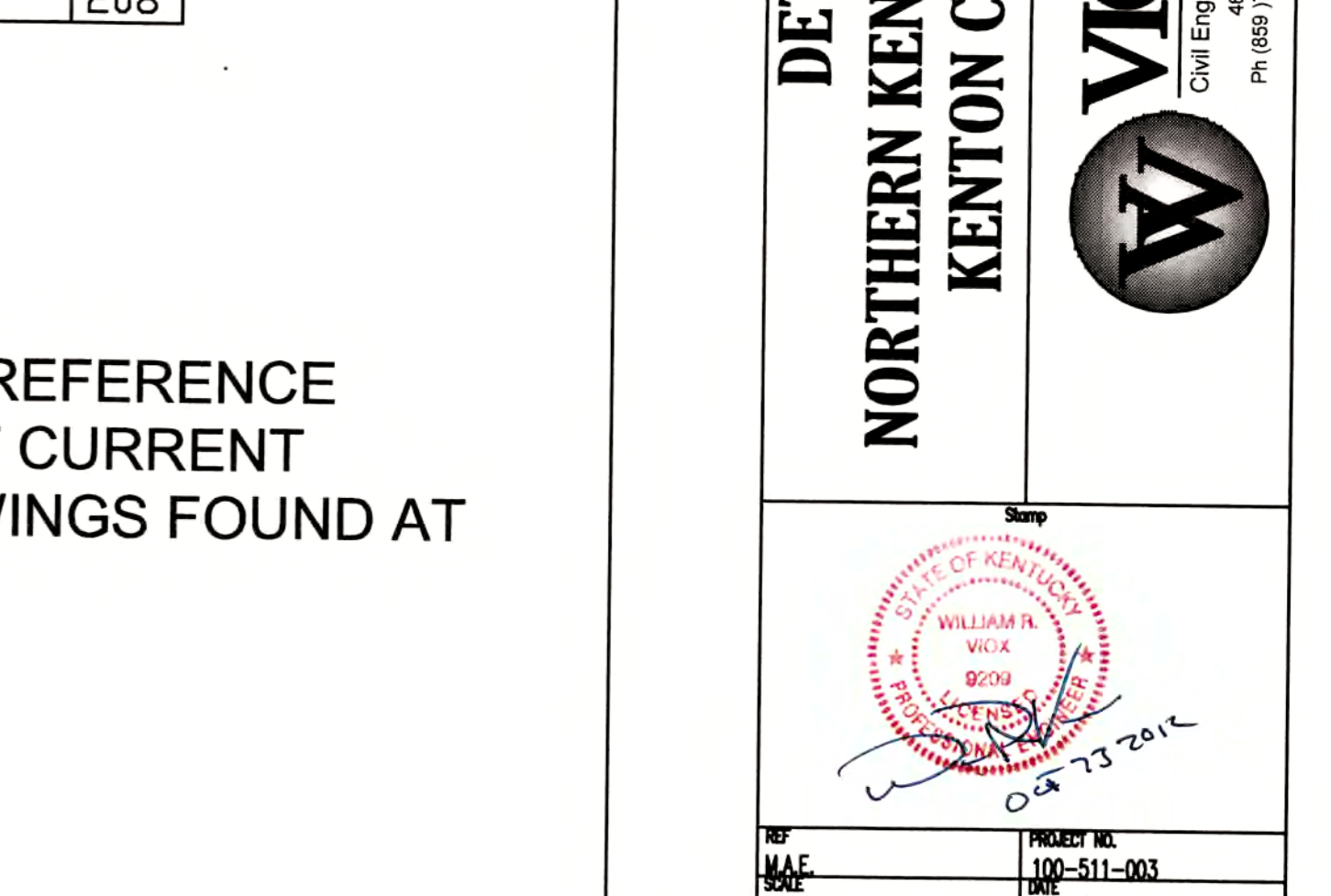
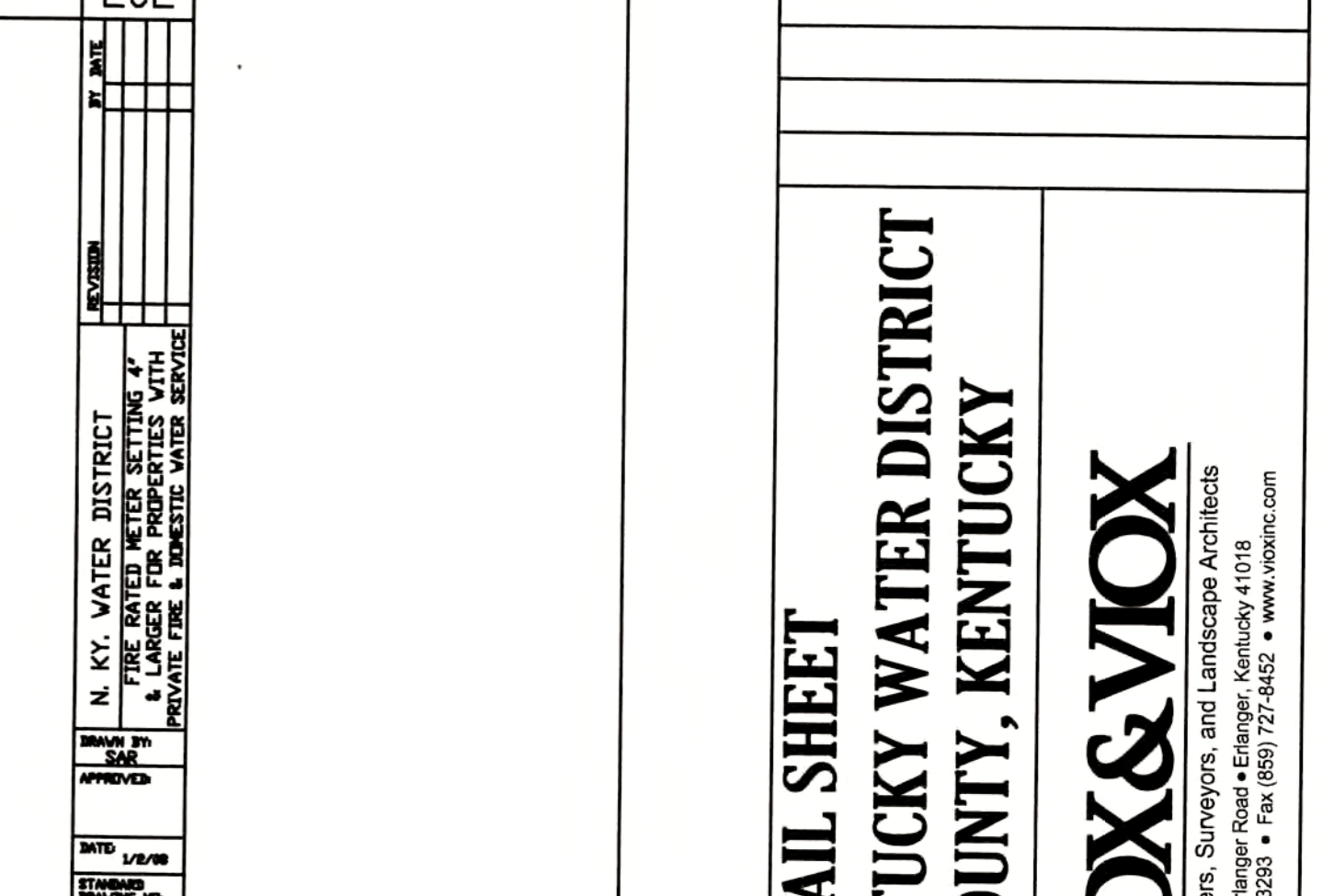
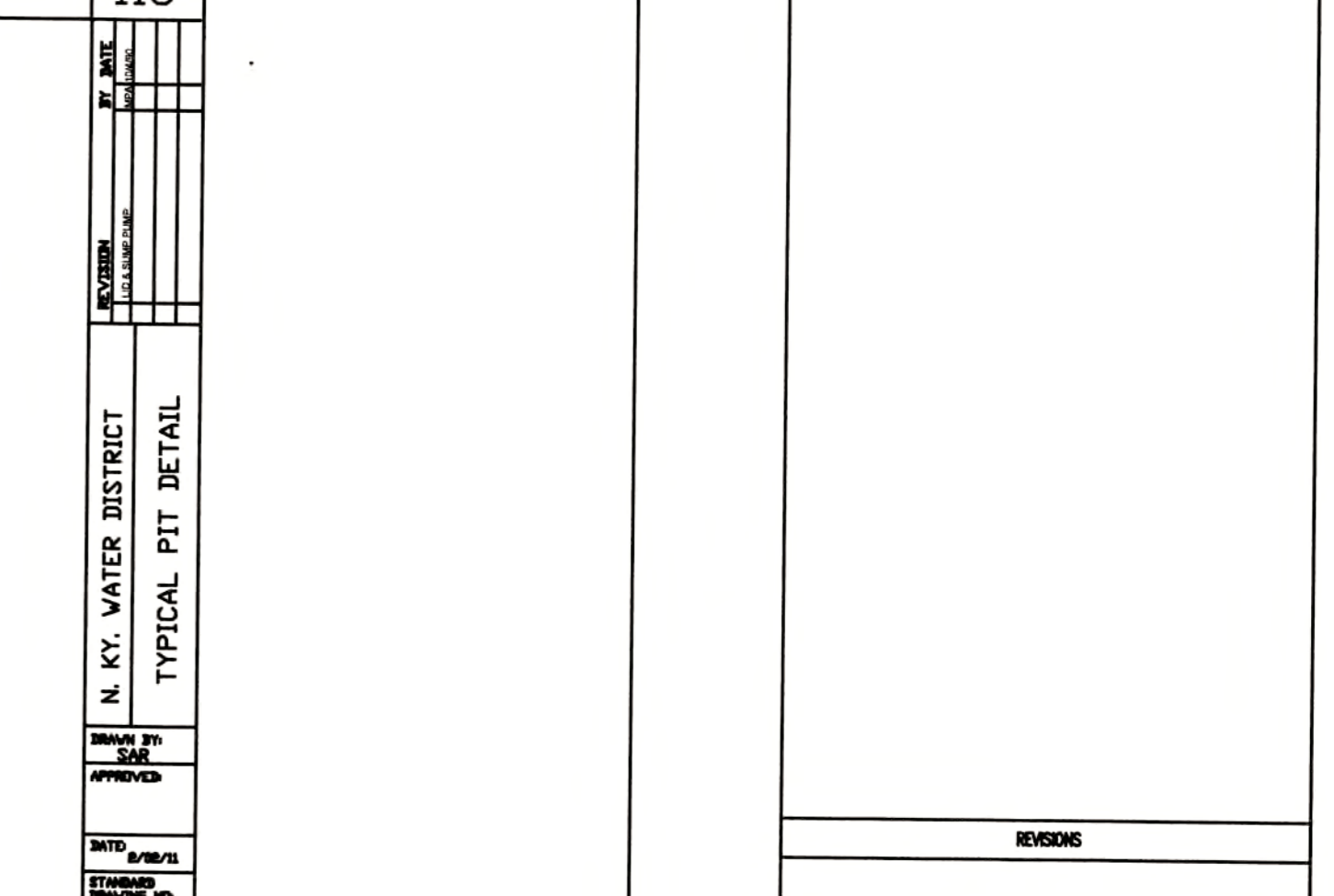
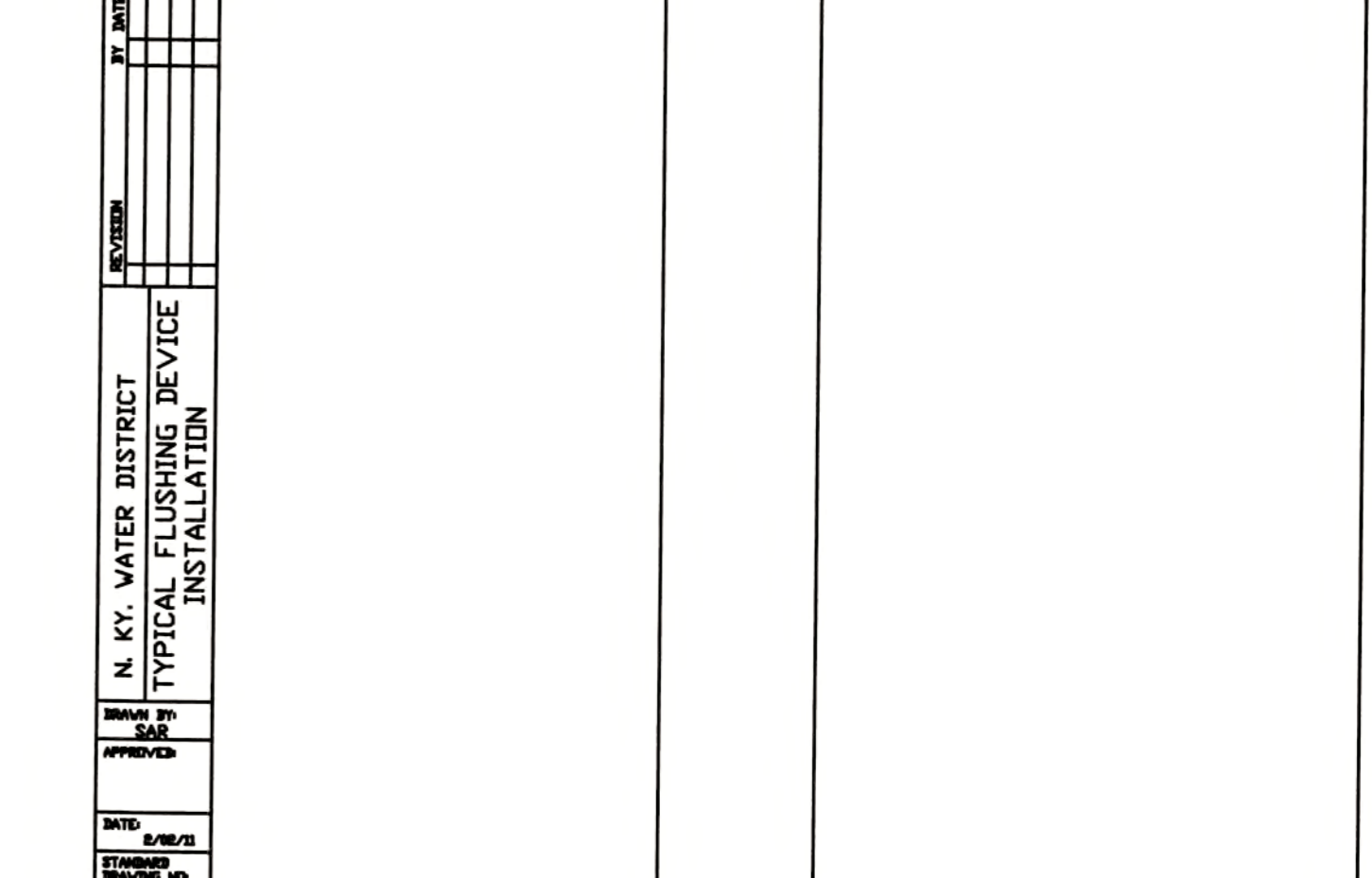
NOTE: CURB STOP BACKING SHALL NOT BE INSTALLED IN PAVED AREAS.

N. KY. WATER DISTRICT VALVE BOX AND VALVE PAD DETAIL
 DATE: 8/20/13
 DRAWING NO: 105



NOTE: DETAILS PROVIDED ON THIS SHEET ARE FOR REFERENCE ONLY. CONTRACTOR TO REFER TO THE MOST CURRENT NKWD STANDARD SPECIFICATIONS AND DRAWINGS FOUND AT www.nkywater.org

N. KY. WATER DISTRICT TYPICAL PIPELINE TRENCH DETAIL
 DATE: 8/20/13
 DRAWING NO: 110

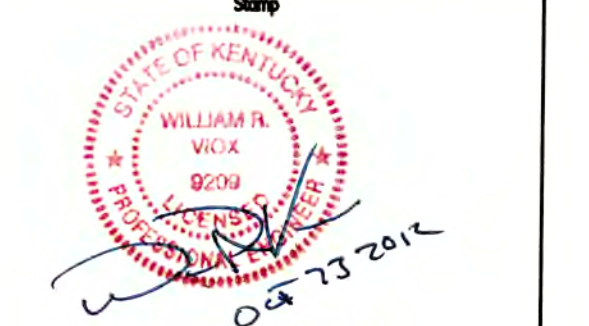


NOTE: DETAILS PROVIDED ON THIS SHEET ARE FOR REFERENCE ONLY. CONTRACTOR TO REFER TO THE MOST CURRENT NKWD STANDARD SPECIFICATIONS AND DRAWINGS FOUND AT www.nkywater.org

N. KY. WATER DISTRICT TYPICAL PIPELINE TRENCH DETAIL
 DATE: 8/20/13
 DRAWING NO: 111

DETAIL SHEET
NORTHERN KENTUCKY WATER DISTRICT
KENTON COUNTY, KENTUCKY

WIOX & VIOX
 Civil Engineers, Surveyors, and Landscape Architects
 465 Erlanger Road • Erlanger, Kentucky 41018
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PROJECT NO: 100-511-003
 DATE: 8/12/12
 AS SHOWN
 DRAWING NO: 005 SUB-DISTRICT-A-011-DETAILSHEET-SUB-104
 Page 12

PIT CONSTRUCTION SPECIFICATIONS

PART 1 - GENERAL

- 1.01 INTRODUCTION** Unless modified, deleted, replaced, or otherwise changed, the latest published addition of the following documents shall be the accepted standard for materials and/or procedures for the construction of meter pits:
 - Northern Kentucky Water District Standard Drawings
 - Natural Resources & Environmental Protection Cabinet, Division of Water
 - Kentucky Public Service Commission Regulations
 - American Water Works Association Standards (AWWA)
 If a conflict exists between referenced sources, the more restrictive requirements shall prevail. The District shall provide interpretation as requested.
- 1.02 REQUIREMENTS FOR METER PIT INSTALLATION.** The following are guidelines for meter pit installations.
 - A. Meter pit** will not be required to be installed if the following conditions can be met:
 - Firelines: 1. An approved backflow prevention device shall be installed as the first device inside the building on the fireline before any taps or branches and- 2. The fire department connection shall be located downstream of the approved backflow prevention device and- 3. The domestic water service is 2" or smaller which will be installed per Standard Drawings #107, 107-A or 108.
 - Domestic Services: 2" or smaller domestic water services shall be installed by the District per Standard Drawings #107, 107-A, or 108.
 - B. Meter pits** shall be required to be installed if one or more of the following conditions exist:
 - Firelines- The fire department connection is required by the authority having jurisdiction to be installed near the public right-of-way. An approved double check assembly shall be required to be installed per Standard Drawing #206, or 207S.
 - Domestic Services- 3" or larger domestic water services shall be installed per Standard Drawings #205R, 207R, or 208.
- 1.03 CONTRACTORS RESPONSIBILITY.** All work performed on any meter pit and/or appurtenances that are owned or anticipated to be owned by the District shall be completed under the direction of the District adhering to an acceptable plan approved by the District. A minimum of 24 hours notice shall be given to the District by the contractor prior to the start of work. If the interruption of service to any customer of the District is necessary, the Contractor shall make arrangements to provide such shutdown and notify District customers at the direction of the District Inspector.

- One set of District approved plans shall be on the job site during construction. There shall be no deviation from the approved plans without written approval from the District.
- 1.04 EXISTING PITS.** Any changes, modifications, or alterations made to an existing pit structure, piping, etc. shall be brought up to current standards. Compliance subject to the discretion of the Water District.
- 1.05 PLANS.** Plans are approved subject to the conditions of compliance with all applicable laws, rules, regulations and standards. The proposed project may be constructed only in accordance with the approved plans. Plans submitted to the District for approval shall have a Professional Engineer or Certified Fire Suppression Technician stamp and signature. Two sets of plans shall be submitted for preliminary review and four sets for final review.
- 1.06 DESCRIPTION.** In general the following specifications are minimum requirements as pit design. Construction may be dictated by location, soil conditions, ground water, topography, etc. Additional provisions may be required upon submission for approval.
- 1.07 ACCESSIBILITY OF PITS.** Accessibility for maintenance and testing of all meter pits shall be provided. A means of access for maintenance vehicles shall be constructed of a hard, all weather surface at least 10' wide and designed to support the heaviest vehicle, within 15' of the pit.
- 1.08 WATER MAINS ON PRIVATE PROPERTY.** Meter pits and appurtenances installed on private property outside of normal conditions which are going to be maintained by the Water District shall have proper documentation provided for all easement areas. See appropriate sections of District's Standards Specifications & Drawings for the installation of Water Mains for procedures.
- 1.09 HIGH PRESSURE AREAS.** Additional requirements may be necessary for high pressure areas (125 psi static pressure or higher) as determined by the District.
- 1.10 MAINTENANCE PERIOD.** The Owner shall be responsible for the maintenance of the installed meter pit and appurtenances to District Standards for a period of not less than one (1) year from the date the meter pit is placed in service by the District. Meter pits will be placed in service when the meter pit is 100% completed to District Standards.
- 1.11 MINIMUM REQUIREMENTS.** Floor slab shall be 8" thick concrete sloping at 1/8 inch per foot to drain or sump location. Dimensions of slab shall be 4 inches larger all around than outside pit walls. Pit shall be drained by a 4" drain or larger as required, leading to grade or a storm sewer. When a drain is not practical an electric operated sump pump shall be used. Walls shall be 8" thick concrete. Top slab shall be 8" thick reinforced concrete with #5 bars @8" O.C. maximum, spanning in short direction and #5 bars @16" O.C. maximum, in long direction. Two (2) #5 bars, two (2) feet long are to be placed at 45 degree to each corner of slab openings. Reinforcing shall be placed 1-1/2" clear from the bottom of the slab or inside wall faces. Additional reinforcement may be required. Pit openings shall have lids as indicated or as approved in traffic areas of a type operable by a single person. Removable aluminum ladders shall be installed in all pits.
- 1.12 METER PIT DIMENSIONS.** Minimum inside pit dimensions shall be: Height - 5 feet; Width - 5 feet; Length - 6 feet.

1.13 QUALITY ASSURANCE

- A. Standards.** The following publications shall be hereby made a part of these specifications:
 - "Specifications for Structural Concrete for Buildings ACI 301-72 (Revised 1975) with Selected ACI and ASTM Referenced, Sp-15(73) by the American Concrete Institute."
 - "Placing Reinforcing Bars, CRSI-WCRSI (Recommended Practice) by the CRSI-WCRSI Committee on Bar Placing."
 - "Standard Specifications for Road and Bridge Construction by the Kentucky Department of Transportation, Bureau of Hwy. 4 Specifications for the Design and Construction Load-Bearing Concrete Masonry by the National Concrete Masonry Association."
- 1.14 Or Equal.** All materials referenced are for design purpose only. Any other materials that are "equal" can be used with prior approval from the District.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Concrete.** Ready mixed type meeting K.D.O.T "Class A", 3,500 psi at 28 days compressive strength, 4" maximum slump.
- B. Reinforcing Steel.** Deformed #5 bars conforming to ASTM A615, A616, or A617, grade 60.
- C. Cast-in-Place Concrete.** Acrylic based "non-residual" type meeting ASTM C309 Type 1 not less than 15% to cure, harden and seal concrete.
- D. Lid.** 48" x 54" double door, aluminum lid with locking padlock bar, centered over the meters, Holiday Products Model #4854 or approved equal. If padlock bar creates hazard, other locking mechanisms may be considered.
- E. Removable Metal Ladder.** Removable metal ladder shall be an approved CH-SA Type 1 Industrial Heavy, 250 pound aluminum ladder. Ladder must reach from the pit floor and extend into the pit opening. The bottom of the ladder shall be blocked to prevent it from kicking out but still be removable.
- F. Waterproofing.** The exterior side of the pit walls shall be waterproofed with one coat of one of the following materials applied in accordance with the Manufacturer's recommendations: Thoroseal, U.S.S. Chemical Tarmastic #102, Koppers Bitumastic Super Service Black; Damchex, Amercoat #78; or an approved equal. Voids between pipes and chamber walls shall be grouted with a hydraulic cement such as Waterplug or an approved equal before waterproofing pit.
- G. Waterplug.** A waterstop shall be provided in the pit floor to the pit walls.
- H. Floor Drain.** Raised or beehive dome grate, 4" minimum, similar to Wade #1634, Joasam #7324-N; or an approved equal.
- I. Pit Drain Line.** Cast iron, Schedule 40 PVC, Plastic STM #35 or ductile iron, 4" minimum.
- J. Alternate To Pit Drain Line.** Electric Submersible Sump Pump, Little Giant, Big John, Stock #3P-639A Model #0-CIA or approved equal. Note: This alternative shall only be used when a drain line is impractical as determined by the District. (See drawing #202 & Part 4 of Pit Specifications)

PART 1 - PRODUCTS

1.01 MATERIALS

- A. Underground Piping and Appurtenances.** All underground piping and appurtenances shall conform to appropriate sections of District's Standard Specifications & Drawings for the installation of Water Mains. All underground piping 4" and larger shall be polyethylene wrapped Class 50 or higher ductile iron pipe from the public water main to the meter pit.
- B. Piping Inside Pits.** Pipes installed inside the pit shall be a minimum thickness of Class 53 flanged ductile iron pipe for 3" and larger piping. The pipe shall extend through the pit walls.
- C. Fittings.** All fittings and accessories shall be Ductile Iron, rated for a minimum of 200 psi working pressure or as specified herein. The fittings and accessories shall be new and unused. (NOTE: Certain areas of the Northern Kentucky Water District require materials used to be of a higher working pressure than 200 psi.) All pipe fittings inside the meter pit shall be flanged.
- D. 2" and Smaller Service Branch Lines.** Type K or L copper conforming to ASTM B88. Valves, fittings, and nipples shall be brass.
- E. Gate Valves 3" & Larger, Inside Pit.** Conforming to AWWA Standard C509. Outside stem and Yoke (OS&Y), ductile iron body, left hand open, resilient wedge, wheel operated, flanged connection, gate valves. Connection Wedge Gate Valve or approved equal. Valves installed as part of a backflow prevention assembly shall be approved by the F.C.C.R., U.S.C.
- F. Valves 2" & Smaller.** All 2" and smaller valves shall be ball valves.
- G. Glands, Gaskets, Bolts & Nuts.** Conforming to AWWA C111.
- H. Bypass Lines on 3" & Larger Meter Lines.** A bypass line of equal or one size less than the domestic line shall be installed on all domestic meter service 3" or larger. Minimum bypass line size is 3".
- I. Meters.** As purchased from Northern Kentucky Water District.
- J. Pressure Reducing Valves.** On domestic lines, pressure reducing valve will be required to be installed when the static system pressure is at or above 125 psi. They will be installed before the meter and are installed to protect the meter only. The District will not be liable for any damage due to pressure conditions caused by or arising out of the failure or defective condition of such equipment. Pressure reducing valves shall be installed at least 5 pipe diameters away from the meter. Cle-Vel Model 690-48 shall be installed on 3" and larger lines. This may also include electronic devices, sight gauge, or any other such devices per District requirements. 0 to 300 psi gauges shall be provided on the inlet and outlet sides of the pressure reducing valve.

K. Packaged, Prefab Meter Vaults.

Packaged, prefab meter vaults are acceptable with approval from the Water District.

PART 3 - EXECUTION

- 3.01 WORKMANSHIP.** Earth cuts may be used for forms of base slab provided vertical sides are kept true and sharp. All embedded items, reinforcing, piping, etc. shall be secured in place prior to placing of the concrete. Concrete shall be protected from loss of moisture for a curing period of at least 7 days. All concrete shall be deposited within 1-1/2 hours following the initial mixing of water and cement. Wall finish shall be a rough form finish. Top slab finish shall be wood float with trowel edges.

PART 4 - ELECTRIC SUMP PUMPS

- 4.01 DESCRIPTION.** In general the following specifications are a minimum requirements for the design and installation of Electric Submersible Sump Pumps in meter pits where a normal drain line is impractical.
- 4.02 ELECTRIC WORK.** All electric work shall be installed according to the National Electric Code and all other applicable codes. All work shall be inspected by an Electrical Inspector and certification provided to the District.
- 4.03 RESPONSIBILITY.** The property owner is responsible for providing continuous electric service for the electric sump pump at the owner's expense. The property owner shall be responsible for the maintenance and upkeep of all electrical boxes, conduit, circuit breaker box, circuit breaker, outlet and wiring outside the pit.
- 4.04 MATERIALS.**
 - A. Electric Submersible Sump Pump.** Electric sump pump shall be U.L. Listed, Little Giant, Stock #3P639, Model #0-CIA.
 - B. Electric Junction Box.** Water resistant, U.L. Listed, P.V.C electrical box shall be installed on the inside of the pit on the wall closest to the sump pump nearest the ceiling.
 - C. Electrical Piping.** Electric piping shall be U.L. Listed for underground use, rigid or plastic installed at least 18" below grade.
- 4.05 INSTALLATION.**
 - A. Sump Pump Hole.** A 4" deep hole shall be provided in the floor of the pit.
 - B. Discharge Piping.** Piping for the water discharge from the electric sump pump shall be plastic or copper. Minimum piping size shall be 1 1/2". A 1/8" hole shall be bored above the check valve of the discharge pipe if freezing temperatures will affect the pipe.
 - C. Water Discharge.** Water discharge shall be directed into a storm sewer or drainage ditch, if this is impractical, water discharge shall be directed on to a 16" x 16" concrete pad.
 - D. Electric Service Line.** The electric line to the pit shall be only used for the pit sump pump, no other electrical taps shall be made on this line.
 - E. Manufacturer's Instructions.** Manufacturer's instructions should be followed for installation.

- K. Backflow Prevention Assembly.** All assemblies shall be listed and approved by the Foundation for Cross-Connection Control, Research, University of Southern California (F.C.C.C.R., U.S.C.) and the District. The testable assembly consists of the backflow prevention unit and two approved shut-off valves. Valves shall be full port ball valves for 2" and smaller and outside stem and yoke, resilient wedge, left hand open, gate valves for 3" and larger. Assemblies shall be delivered completely assembled by the original manufacturer with all components as approved by F.C.C.C.R., U.S.C. The assembly shall not be separated or altered in anyway. The type of backflow prevention assembly to be installed shall be determined by the N.K.W.D. (see Backflow Prevention Device Assembly Standard Drawings Figure 11-a for general guidelines). All approved backflow devices shall be tested and certified that it works properly after system activation. Special permission must be obtained from the District to install a reduced pressure backflow prevention assembly in a pit.
- L. Booster Pumps.** Booster pumps 3" and larger installed on water lines shall be equipped with a Pump Section Control Valve and/or a Low Pressure Cut-off Device which is designed to modulate the pump discharge or shut-off the booster pump when the pressure on the suction-side of the pump drops to 20 psi.

PART 2 - EXECUTION

- 2.01 INSTALLATION.**
 - A. Pipe Laying.** Conforming to AWWA Standard C500. Maintain a minimum pipe cover of 3'-0" with continuous pipe support for entire length. All underground piping shall be installed according to appropriate sections of District's Standard Specifications & Drawings or the installation of Water Mains."
 - B. Pit Components.** Adequately supported by solid concrete blocks or supports set on the floor slab, 2" or smaller domestic service lines may be supported by brackets mounted on the pit wall.
 - C. Anchoring.** Inlet valves on 3" or larger piping shall be securely anchored to the pit wall when piping is sleeved through the wall. Additional rodting may be required at the discretion of the District.
 - D. Waterproofing.** The interior of all surfaces in contact with the potable water system, tapping sleeve, valves, couplings and pipe shall be swabbed with a 5% hypochlorite solution prior to installation.
 - E. Valve Box Protection.** The valve box cover the tapping sleeve if located outside of a hard paved area shall have a minimum 2'x2'x4" square pad cast around the lid. Refer to standard drawing No. 105.
 - F. Flushing of Mains.** Lines shall be flushed at a rate 2.5 ft/s.

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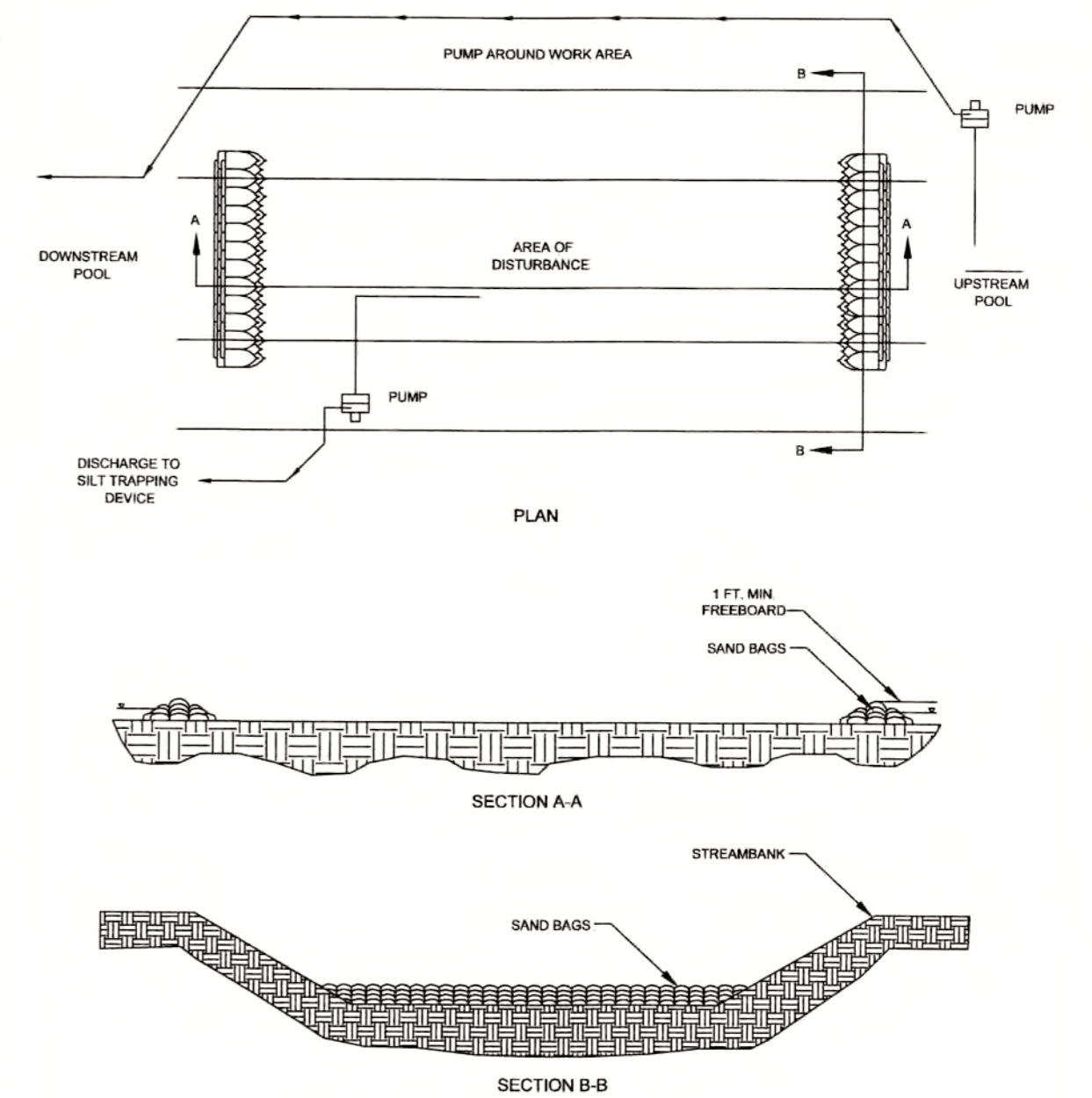
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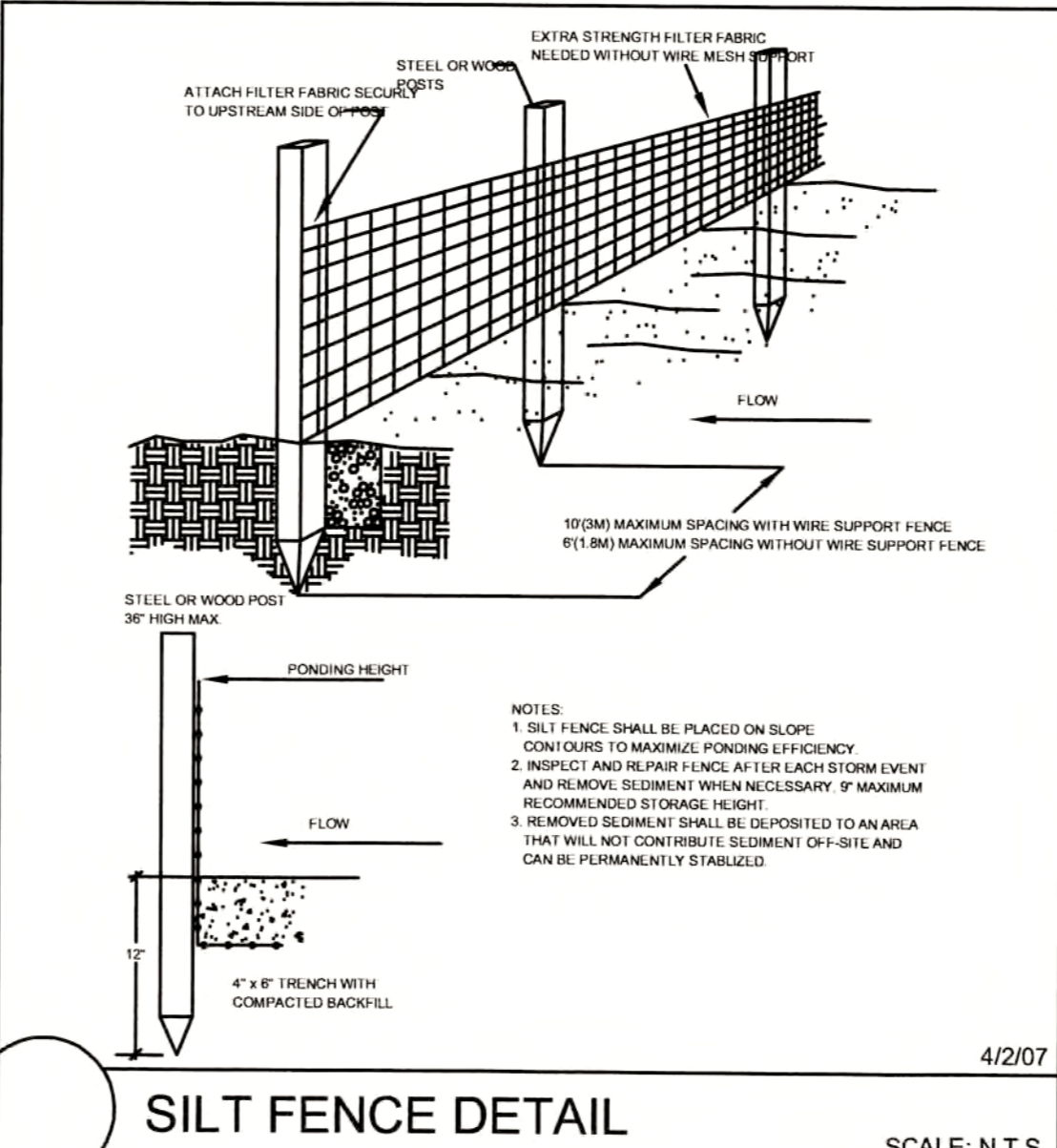
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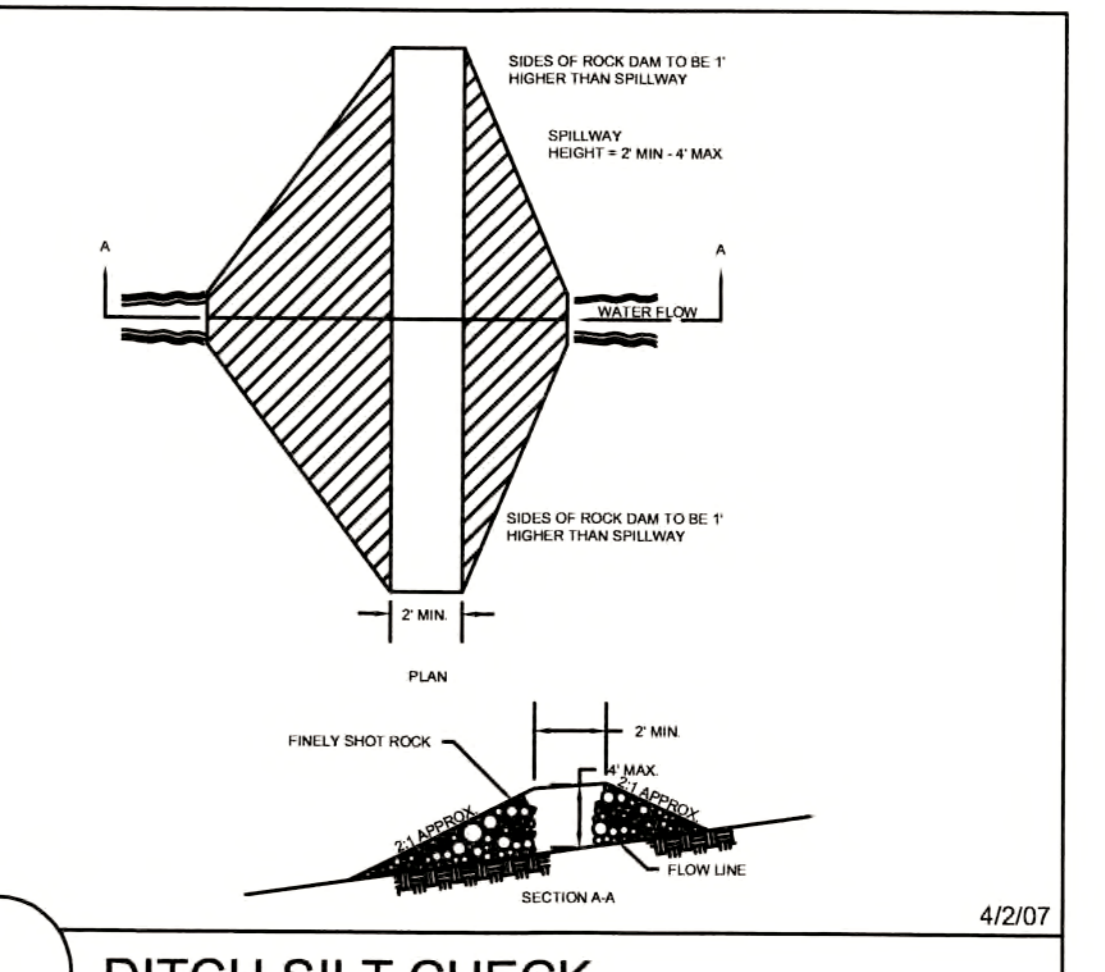


- PUMP AROUND FLOW DIVERSION NOTES**
- 1. USE PUMP AROUND DIVERSION WHEN CONSTRUCTION ACTIVITY IS WITHIN A FLOWING STREAM, CREEK, OR DITCH.
- 2. PUMP AROUND DIVERSION LOCATIONS IDENTIFIED ON THE PLANS MAY NOT BE REQUIRED IF STREAM, CREEK, OR DITCH CROSSING IS DRY AND NOT FLOWING.

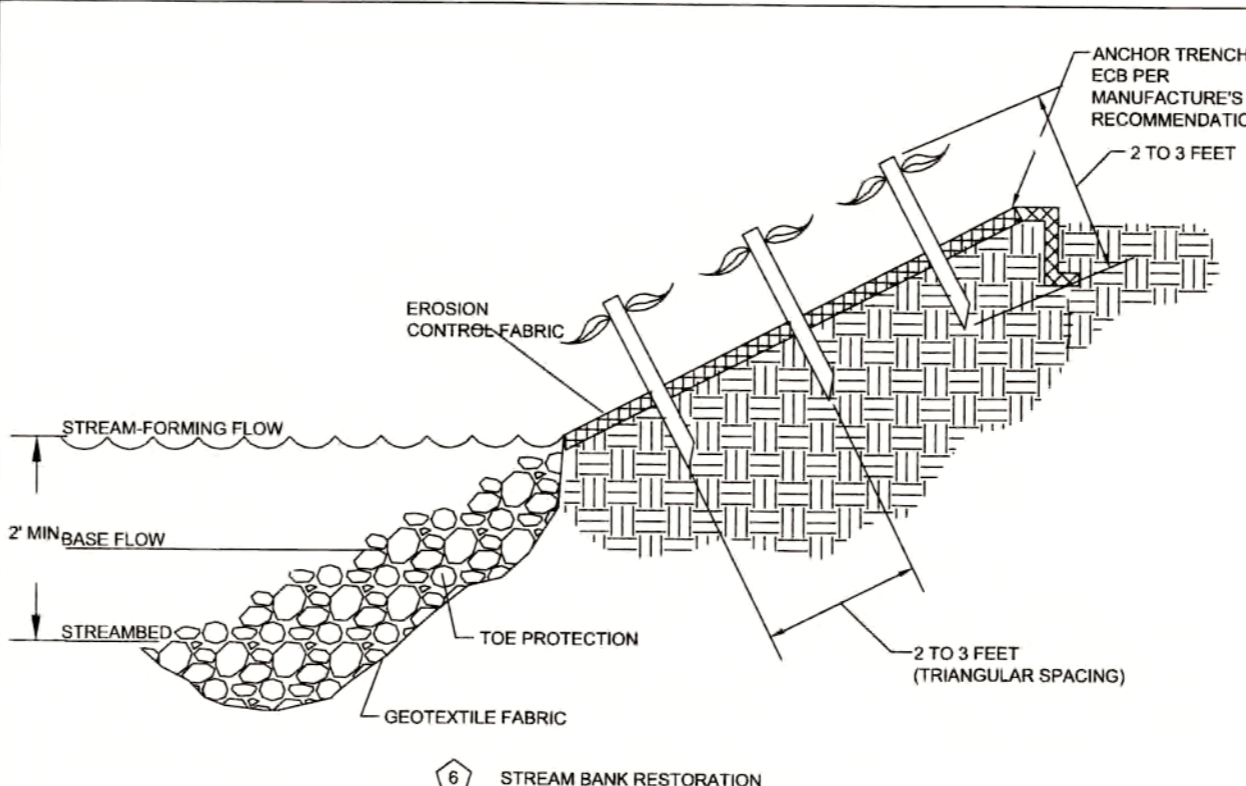
PUMP AROUND FLOW DIVERSION DETAIL SCALE: N.T.S.



SILT FENCE DETAIL SCALE: N.T.S.

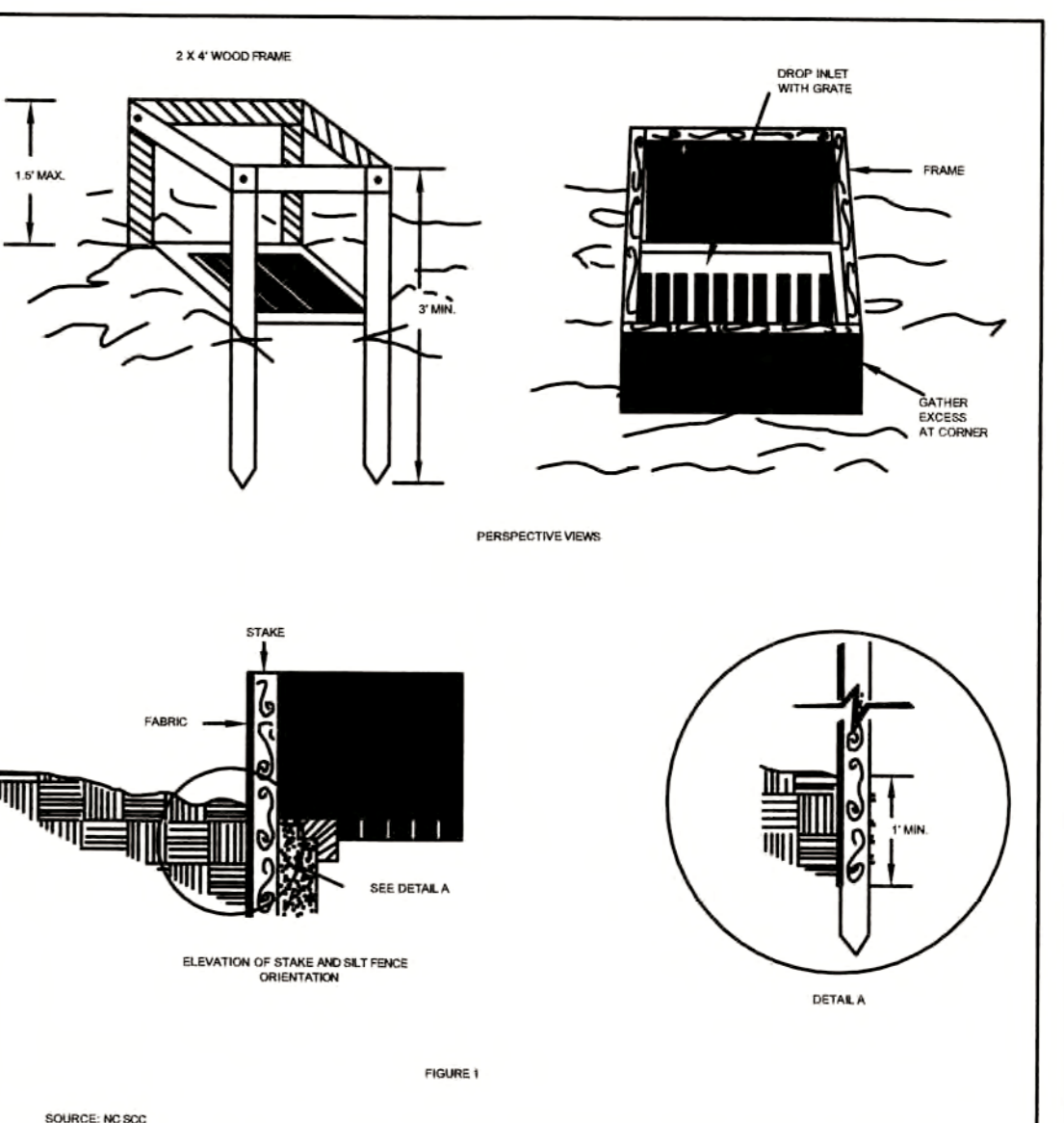


DITCH SILT CHECK SCALE: N.T.S.



- STREAM BANK RESTORATION NOTES**
- 1. STREAM CHANNEL BANK RESTORATION FOR ALL CROSSINGS SHOWN ON THE DRAWING.
- 2. ROCK TOE STONE SHALL BE CLASS III CHANNEL LINING. ON-SITE LIMESTONE ROCK OF APPROPRIATE SIZE MAY BE USED.
- 3. CONTRACTOR SHALL RESTORE STREAM CHANNEL BANKS IMMEDIATELY FOLLOWING STREAM CROSSING CONSTRUCTION. FAILURE TO COMPLETE RESTORATION IMMEDIATELY AFTER CROSSING TO THE SATISFACTION OF THE OWNER WILL RESULT IN NONPAYMENT OF THE CONTRACTOR'S PAY REQUEST. TEMPORARY PUMP AROUND FLOW DIVERSION WILL BE REQUIRED FOR ROCK TOE PLACEMENT IF STREAM WATER IS PRESENT.
- 4. CHANNEL BANKS SHALL RECEIVE SITE-DEP. PREPARATION AND SEEDING PER CONTRACT AND SPECIFICATIONS. EROSION CONTROL BLANKET (ECB) SHALL BE INSTALLED FROM ROCK TOE UP TO TOP OF BANK AND PROPERLY INSTALLED, INCLUDING ANCHOR TRENCHES, PER MANUFACTURER'S RECOMMENDATION. ECB SHALL BE 50:50% BY NORTH AMERICAN GREEN, OR APPROVED EQUAL.
- 5. LIVE STAKES
- ACCESSIBLE LIVE STAKE PLANTINGS (COMMON NAME): BUTTONBUSH, SILKY DOODWOOD, WILLOW, AMERICAN EDERBERRY.
- STAKES SHALL BE 0.5 TO 1.5 INCHES IN DIAMETER AND 2 TO 3 FEET LONG.
- STAKES MUST HAVE SIDE BRANCHES CLEARLY REMOVED WITH THE BARK INTACT. THE BASAL ENDS SHOULD BE CUT AT AN ANGLE. THE TOP SHOULD BE CUT SQUARE. LIVE STAKES SHOULD BE INSTALLED WITHIN ONE DAY OF HARVESTING AND PREPARATION.
- TAMP LIVE STAKES INTO THE GROUND, THROUGH THE ECB, AT RIGHT ANGLES TO THE SLOPE. SPACING SHALL BE 2 TO 3 FEET APART USING TRIANGULAR SPACING. BUDD SHALL BE ORIENTED UP.
- SOIL SHALL BE FIRMLY PACKED AROUND EACH STAKE AFTER INSTALLATION. SPLIT STAKES SHALL BE REMOVED AND REPLACED.

STREAM RESTORATION SCALE: N.T.S.



SILT FENCE INLET PROTECTION SCALE: N.T.S.

DETAIL SHEET
 NORTHERN KENTUCKY WATER DISTRICT
 KENTON COUNTY, KENTUCKY

VIOX & VIOX
 Civil Engineers, Surveyors, and Landscape Architects
 468 Erlanger Road • Erlanger, Kentucky 41018
 Ph: (859) 727-3263 • Fax: (859) 727-8452 • www.vioxinc.com

PROJECT NO: J00-511-003
 DATE: 6/12/12
 AS SHOWN
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