KENVIRONS

Kenvirons, Inc. 452 Versailles Road • Frankfort, KY 40601 • Phone: (502) 695-4357 • Fax: (502) 695-4363
Civil & Environmental Engineering and Laboratory Services

May 6, 2016

Kentucky Public Service Commission
211 Sower Blvd.
Frankfort, KY 40601

RE: Cumberland Falls Highway Water District; Whitley Co., KY
PSC Case No. 2015-00115

Dear Sirs:

Pursuant to the PSC's order of May 7, 2015 in the above referenced case, attached are an itemized as built budget, a digital copy of the record drawings and a copy of our letter certifying the construction was completed in accordance with the contract plans and specifications.

Should you need any additional information, please contact me.

Sincerely,

Kenneth D. Taylor, P.E.
Vice President

Attachment

Copy: CFHWD

US 25 W Transmission Main and Pump Station
Cumberland Falls Highway Water District
PSC Case No. 2015-00115
As Built Budget

Total Engineering:	$186,604.23
Preliminary:	$12,000.00
Design:	$104,228.21
Inspection:	$62,726.02
Environmental:	$7,650.00
Total Construction:	$1,165,080.00
Pipeline:	$935,080.00
Booster Pumps:	$230,000.00
Legal:	$13,401.64
Interest:	$6,708.34
TOTAL:	$1,371,794.21

KENVIRONS

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Civil & Environmental Engineering and Laboratory Services

April 18, 2016

Mr. Jimmy Creekmore, Chairman
Cumberland Falls Highway Water District
6926 Cumberland Falls Highway
Corbin, Kentucky 40701

RE: US 25 Transmission Main and Pump Station
AI #34132, APE20140001
PWSID #1180093-14-001

Dear Mr. Creekmore:

To the best of our knowledge and belief the above referenced water project has been constructed and tested in accordance with the approved plans, specifications and requirements. The work was substantially complete and the line ready to be placed into service on April 11, 2016 and we are recommending that the one year warranty period commence on that date.

Attached for your use are three (3) sets of the record drawings (2-24" x 36" and 1-11" x 17"). We are also submitting a CD to the Cumberland Valley ADD with the constructed line delineated so they can include it in their data base.

Should you have any questions, please call.

Sincerely,

Kenneth D. Taylor, P.E.
Vice President

Enclosures

C: USDA Rural Development
KDOW
CVADD
Akins Excavating, Inc.

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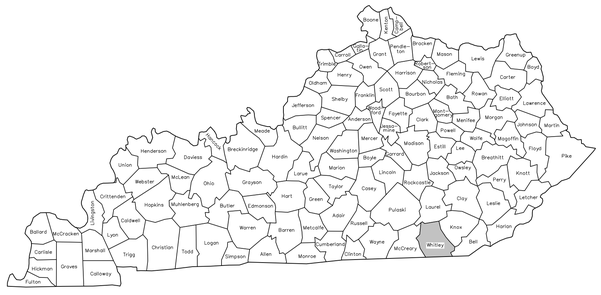
CUMBERLAND FALLS HIGHWAY WATER DISTRICT
US 25W TRANSMISSION MAIN & PUMP STATION
WHITLEY COUNTY, KENTUCKY



INDEX OF SHEETS

RECORD DRAWINGS
APRIL 2016

This Record Drawing Set has been prepared based on information provided by the Contractor, Resident Inspector, and others. This set has been created to indicate significant changes made to the original design set during the construction process. Kenvirons, Inc. has not verified the accuracy and/or completeness of this information and shall not be responsible for any errors or ommissions which may be incorporated herein as a result.

Prepared By:

KENVIRONS, INC.

FRANKFORT, KENTUCKY

STATE OF KENTUCKY
CARLOS F. MILLER
7384
LICENSED PROFESSIONAL ENGINEER

QA/QC: _____ DATE: _____

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GENERAL NOTES

1. Stations shown on the water line are for reference only and do not reflect the actual linear lengths of pipe required for construction.
2. The Contractor shall be responsible for coordinating all construction work with local utility companies and other concerned parties.
3. Existing buried utilities are shown on the drawings in their general location utilizing the best available information. Before construction begins near or through existing utilities (i.e. Gas Co., Telephone Co., etc.) each utility company shall be notified, a request for the exact location of the utility shall be made, and permission to proceed with construction obtained. The utility shall be given at least one week advance notice for location verification. BUD provides a clearinghouse service for member utilities relative to underground utilities location. The Contractor shall contact BUD at telephone no. 1-800-752-6007 or 811.
4. Before construction begins through any property, the Contractor shall make himself aware of the exact location of construction through the property and the bounds of the permanent and temporary construction easements.
5. The Contractor shall have on hand at the job site 11 1/4", 22 1/2", 45° and 90° bends for use where necessary for proper installation.
6. Pipe joint deflection shall not exceed 2°. Bending of PVC pipe will not be allowed.
7. At some locations, the Contractor may be required to provide extra cover over line. Cost of extra cover is to be included in unit price bid for line installation and no separate payment will be made for such extra cover. All such locations are shown on the plans.
8. Connecting new lines to existing lines or to work in other contracts is subsidiary to the contract unless specifically itemized in the Bid Schedule. It includes fittings, sleeves, etc., but does not include gate valves, which are an extra pay item.
9. All fittings, thrust restraint and appurtenances to construct the pipelines as shown shall be included in the unit cost for the pipe and are not separate pay items.
10. The pipe lengths have been estimated as close as possible. The Contractor shall be responsible for ordering pipe quantities necessary for installation to the limits as shown on the Drawings unless otherwise instructed. Any left-over pipe quantities shall be the property of the Contractor unless other arrangements are made. The Owner shall not be responsible for re-stocking or other charges associated with the left over pipe.
11. Ductile iron pipe shall be installed in accordance with Standard AWWA C150/ANSI A21.50 Laying Condition Type 3 unless otherwise noted.
12. All driveways that are cut shall be backfilled with KTC #8 or 9-M and shall be included in the unit price for pipe installation.
13. All open cut streets and roads and trenches cut in existing pavements shall be backfilled with compacted crushed stone or DGA in accordance with the miscellaneous details drawings.
14. Paved driveways shall be free-bored. Free bore unit prices are contained in Bid Schedule. The material in which the free bore is made is unclassified.
15. It is the responsibility of the Contractor to comply with all regulations regarding the effect on the environment from the discharge of chlorinated water. See Technical Specification 15103 Subsection 3 for methods of sterilization and for disposing of heavily chlorinated water.
16. The time period for pressure testing in this project shall be 6 hours.
17. Final cleanup is a separate pay item in the Bid Schedule which includes seeding and straw mulch along the entire length of the pipeline trench. A power landscape rake shall be used for seedbed preparation. See the Specifications for specific requirements.
18. Tracer tape and wire shall be installed with the PVC pipe. See Technical Specification 15100, and the miscellaneous details drawings.
19. During the process of tapping asbestos concrete mains, the contractor shall conform to OSHA regulations governing the handling of hazardous waste. Pieces of asbestos concrete resulting from the tap shall be double bagged, placed in a rigid container and disposed of in an approved landfill.
20. **Distribution pipelines and customer service lines exist along the entire route of the transmission pipeline to be installed in this project. Attention is directed specifically to Note 3 of these General Notes.**
21. Final Cleanup payment is for transmission and distribution pipelines only. It does not include service lines.
22. Locations where pipeline is to be installed on state road right-of way are approximately delineated on the drawings. The Contractor, along with the Engineer's Representative, shall determine, precisely, the field locations for transitions between private easements, and state and county road rights-of-way.
23. All pipelines installed in the ditchline on state or county rights-of-way shall have 42" minimum cover over top of pipe.
24. The pipeline trench width will be strictly enforced. See Technical Specification 15100 for trench width requirements.
25. The GENERAL CERTIFICATION – NATIONWIDE PERMIT #12 – UTILITY LINE BACKFILL AND BEDDING is contained in the Specifications. The Contractor shall read, understand and comply with the requirements and procedures. All crossings of streams that appear as a blue line on a USGS 7.5 minute topographical map shall be accomplished in accordance with: PERMIT #12, UTILITY LINE BACKFILL AND BEDDING. It is the intent of the plans to identify a stream crossing at each blue line stream. Small creek crossings, less than 15 feet measured from top of bank to top of bank, may be accomplished by trenching when the stream is in a no-flow condition. If the stream is in a flow condition, the crossing shall be accomplished by directional boring or other method that complies with the General Certification and is approved by the Engineer. Specific details for stream crossings are contained in the Miscellaneous Details. Bid items for specific stream crossings may be contained in the Bid Schedule with the type of crossing shown on the Plan Sheets. Payment shall be "Each" for directional bores of small stream crossings. All small stream crossings in the project shall be considered the same regardless of width (up to 15 L.F.) or depth. It is the responsibility of the Contractor to determine an average unit price that will be used for payment for each instance a blue line stream is crossed. Stream crossings may be added, for extended lines beyond those shown on the plans, at the same unit price providing the crossings are reasonably similar to those in the initial project. Stream crossings may be deleted, without effecting the unit price, if a line is deleted or shortened. Payment for specific bid item directional bored stream crossings shall be "Lump Sum".
26. Rough cleanup is included in the unit price for pipe installation and must be done before payment for pipe will be approved.
27. Do not cut fences except where specifically shown and noted.
28. The Contractor shall obtain and pay for all grading, storm water, etc. permits, if any required to complete the work. The contractor shall maintain compliance with all conditions, limitations and stipulations of all permits. The contractor shall not commence work, except mobilization, until he has obtained all required permits for said work. The contractor shall supply the owner with copies of all permits within 24 hours of receipt. A KPDES Storm Water Discharge Permit will be required for this project. The contractor shall fill out, sign and submit the Notice of Intent (NOI) and the Notice of Termination (NOT). The Notice to Proceed will not be issued until the Permit has been provided.
29. All work shall be provided in accordance with all terms of the General Construction Permit and the Floodplain Construction Permit as issued for the Project by the Kentucky Department for Environmental Protection, Division of Water. The Owner will secure said Construction Permits and deliver a copy of each to the Contractor, to be maintained on-site at all times during construction.

GENERAL NOTES (CONT.)

30. All work shall be provided in compliance with all applicable local, state and national building codes.
31. All work shall be executed in compliance with the current workplace safety regulations of the U.S. Department of Labor, Occupational Safety and Health Administration (O.S.H.A.).
32. The Contractor shall restrict all construction activities to within the limits of the public right-of-way and the private easements and fee parcels unless otherwise approved by the Owner in writing. The Contractor shall be solely liable for any and all Work he performs outside of the boundaries of the public road right-of-way and the private easements and fee parcels provided by the Owner.
33. The Contractor is solely responsible for determination of the existence and location of any and all other buried utilities in the vicinity of his Work. Utilities shown on the Project Drawings are purported to be approximate only and not warranted to be complete nor accurately located. Additional buried utility lines, other than as shown on the Project Drawings, may exist in the vicinity of the Project work. The Contractor shall contact local utilities and/or locating service at least 48 hours prior to commencing work on the Project.
34. The Contractor shall be responsible for all traffic control measures necessary to the safe execution of his work, including but not limited to flaggers, traffic signage, barricades, construction fencing and nighttime warning lights. Traffic safety provisions shall be employed by the Contractor in accordance with the Standards of the appropriate State and local public highway authorities.
35. All excavation and all boring shall be considered unclassified excavation and unclassified boring. No additional payment shall be due and payable to the Contractor for dewatering of pipe trenches/excavations or for excavation and removal of rock or for boring casing through rock.
36. All water main fittings shall be ductile iron, mechanical joint compact fittings for water service complying with AWWA Standard C153. Unless otherwise specifically shown or noted, no PVC fitting, other than in-line repair couplings, will be accepted.
37. All water main fittings shall be anchored with poured concrete thrust blocks as shown in the miscellaneous details drawings. Wrap fittings in minimum 5-mil plastic (PVC) wrap prior to forming and pouring the block.
38. Prior to cutting existing driveways, the Contractor shall notify the property owner/occupant at least 24 hours in advance and shall schedule his Work such to restrict access to not more than 2 hours in one (1) day.
39. The Contractor shall repair/replace any and all existing utility lines and equipment damaged by the Contractor's Work, to the satisfaction of the damaged utility and at no additional cost to the Owner.
40. The Contractor shall protect all drainage culverts in the vicinity of his work and shall repair or replace all culverts damaged by his Work and at no additional cost to the Owner. All existing culverts may not be shown/noted on the Project Drawings.
41. Existing utility lines may be cathodically protected. The installation of all ductile iron pipe, fittings and appurtenances within 100' of cathodically protected utility lines shall comply with AWWA Standard C105 (Polyethylene Encasement), latest revision, and at no additional cost to the Owner. This requirement will be specifically applicable to all new iron pipe located within 100' of the cathodically protected new primary booster station.
42. There are no sanitary sewers or drains known to exist in the vicinity of the proposed new water main. If unforeseen sewer or other sanitary facility is encountered, the Engineer shall direct the relocation of the water main to provide separation and/or other protection of the water main in accordance with terms of the Kentucky Department for Environmental Protection, Division of Water Construction Permit. The Contractor shall provide relocation of the water main as directed by the Engineer and the Contract Price adjusted only by/to the number of Bid Item units actually provided.
43. No water service shall be activated until the new work has been completed, sterilized, and tested in accordance with the Contract Documents and accepted in writing by the Owner.

ENVIRONMENTAL NOTES

1. When crossing all streams, silt barriers, ie. straw bales or silt fences, shall be put in place to prevent sediment runoff into stream. Conventional stream crossings shall be accomplished during low flow periods. Stream banks shall be reseeded with native vegetation beneficial to wildlife immediately following completion of the stream crossing. Disturbed surfaces shall be restored to original contours and excess materials removed to a properly confined area.
2. If the removal of any trees greater than (6) inches in diameter at breast height is required, The tree removed shall be accomplished between October 15 and March 31.
3. Any excavation by the Contractor that uncovers a historical or archaeological artifact shall be immediately reported to the Owner and Engineer. Construction shall be temporarily halted pending the notification process and further directions after consultation with the State Historic Preservation Officer (SHPO).

HIGHWAY DEPARTMENT NOTES

1. Underground utilities installed inside state right of way shall be located within 3-5 feet from the edge of the right of way unless otherwise shown on the plans.
2. Underground utilities installed in KDOT right-of-way in Whitley County may be installed with a minimum depth of cover of 30 inches except in the ditchline where the depth of cover shall be 42 inches.
3. Underground utilities crossing any paved driveway inside state right of way shall be installed by boring unless written permission to open cut is obtained from the property owner.
4. Underground utilities shall not be installed in embankment fills or between edge of pavement and ditchline unless specifically noted on permitted plans.
5. Fire Hydrants or utility service boxes should be located within 2 feet from the edge of right of way line, or off right of way.
6. Contact KTC-DOH District prior to beginning work.
7. All effected KYTC ditchlines shall remain free of excess silt or erosion and constructed to the normal typical section of the roadway with a minimum depth of 18 inches from the shoulder break point.
8. All necessary steps shall be taken to prevent erosion or siltation of the public right-of-way, adjoining property and waterways.

GENERAL NOTES

CUMBERLAND FALLS HIGHWAY WATER DISTRICT
US 25W TRANSMISSION MAIN
WHITLEY COUNTY, KENTUCKY

COMMONWEALTH OF KENTUCKY
CARLOS F. MILLER
7384
LICENSED PROFESSIONAL ENGINEER

DRAWN BY: JKP/PTH
CHECKED BY: CFM
CHECKED BY:
DATE: April 2014
SCALE: 1"=100'

DWG.	REVISIONS
04/16	RECORD DWG.

KENVIRONS, INC.
FRANKFORT, KENTUCKY

PROJECT NO.
2012059

SHEET NO.
1

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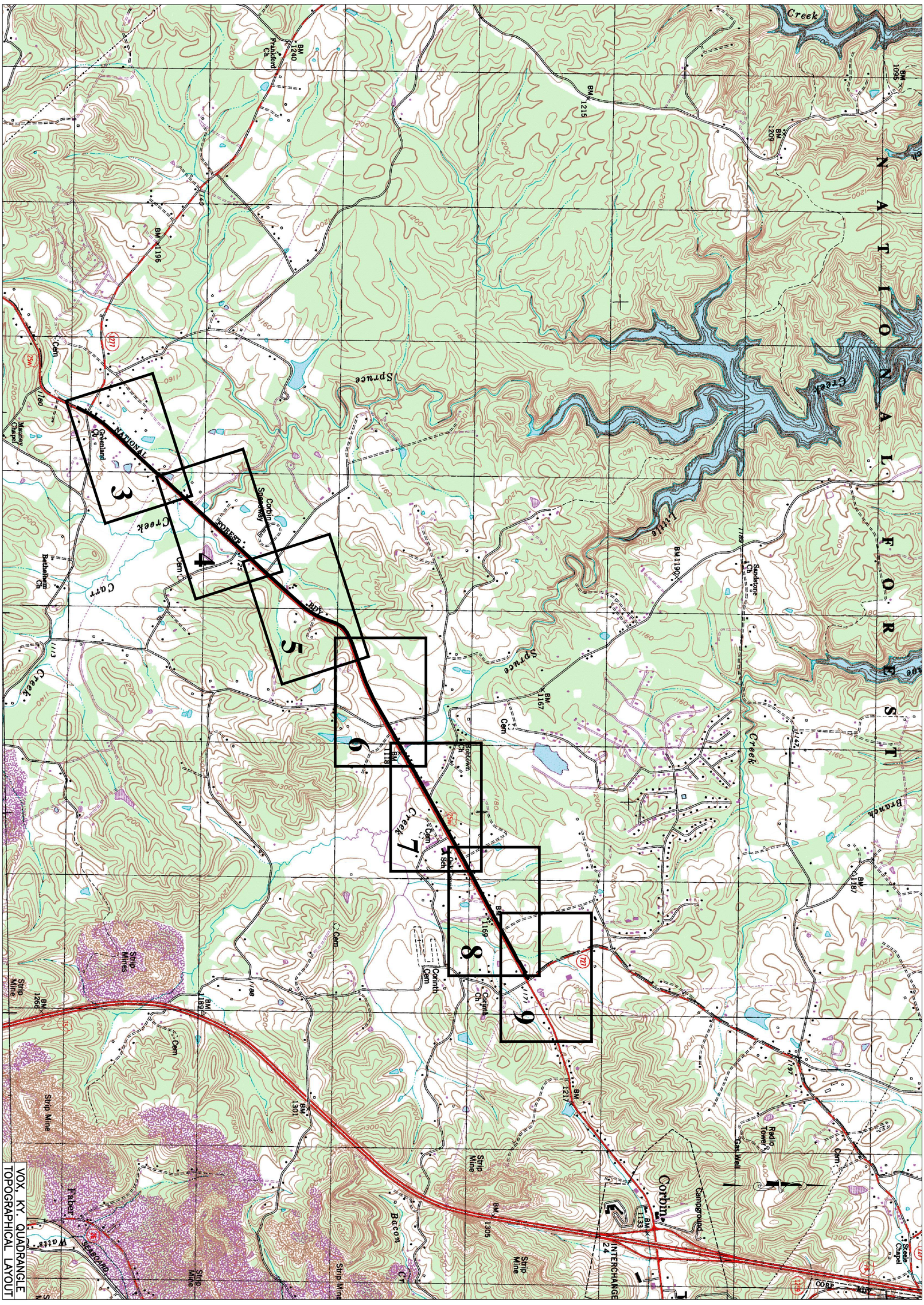


VOX, KY. QUADRANGLE
TOPOGRAPHICAL LAYOUT

DRAWN BY:	JKP/PTH
CHECKED BY:	CFM
CHECKED BY:	
DATE:	Apr. 2012
SCALE:	1"=1,000'
REVISIONS	
04/16	RECORD DWG.

STATE OF KENTUCKY
CARLOS F. MILLER
7384
LICENSED
PROFESSIONAL ENGINEER

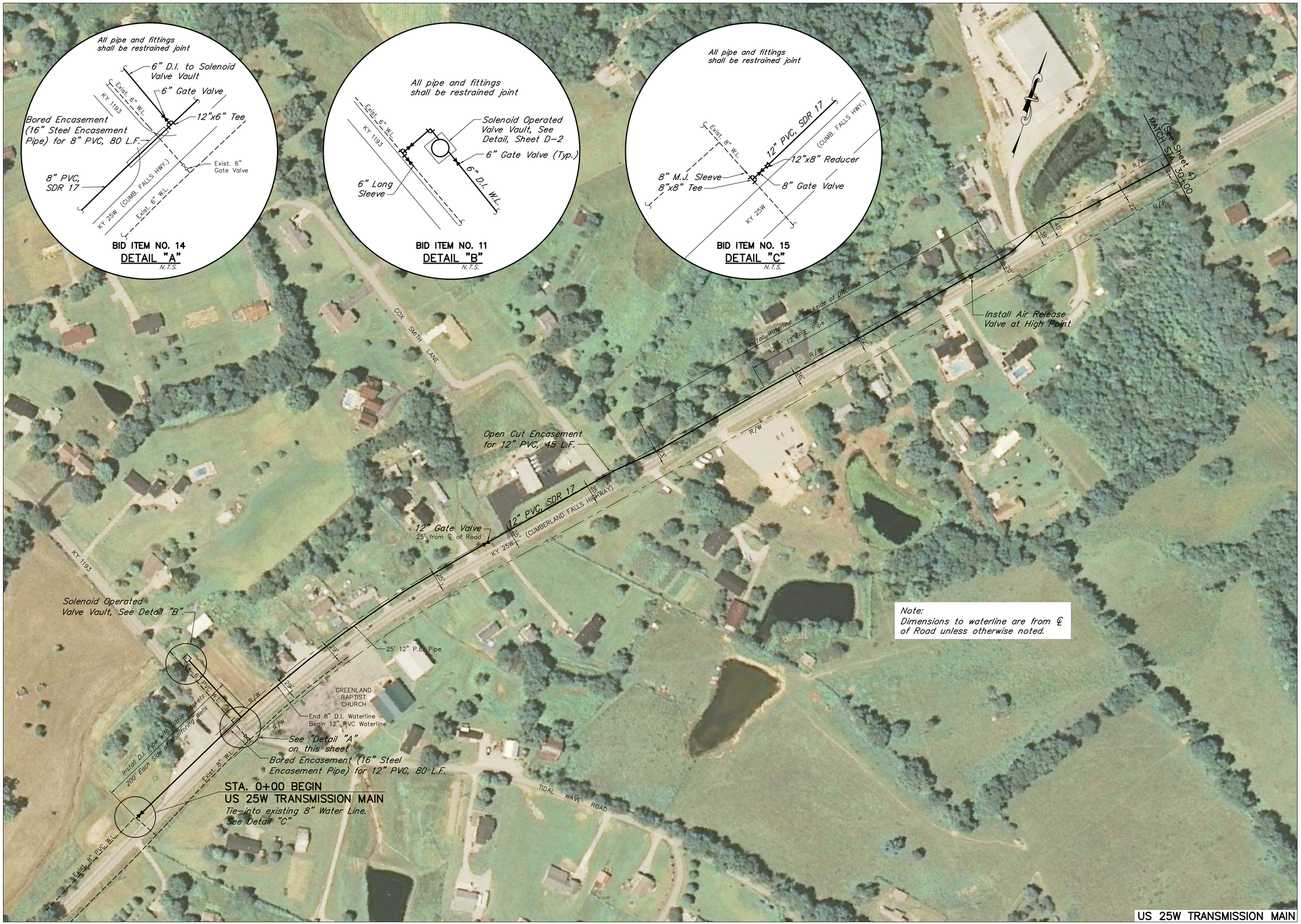
KENVIRONS, INC.
FRANKFORT, KENTUCKY

PROJECT NO. 2012059

SHEET NO. 2

CUMBERLAND FALLS HIGHWAY WATER DISTRICT
US 25W TRANSMISSION MAIN
WHITLEY COUNTY, KENTUCKY

CUMBERLAND FALLS HIGHWAY WATER DISTRICT
US 25W TRANSMISSION MAIN
WHITLEY COUNTY, KENTUCKY



STATE OF KENTUCKY
CARLOS F. MILLER
7384
LICENSED PROFESSIONAL ENGINEER

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DATE:	April 2014
SCALE:	1"=100'
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KENVIRONS, INC.
FRANKFORT, KENTUCKY

PROJECT NO.
2012059

SHEET NO.
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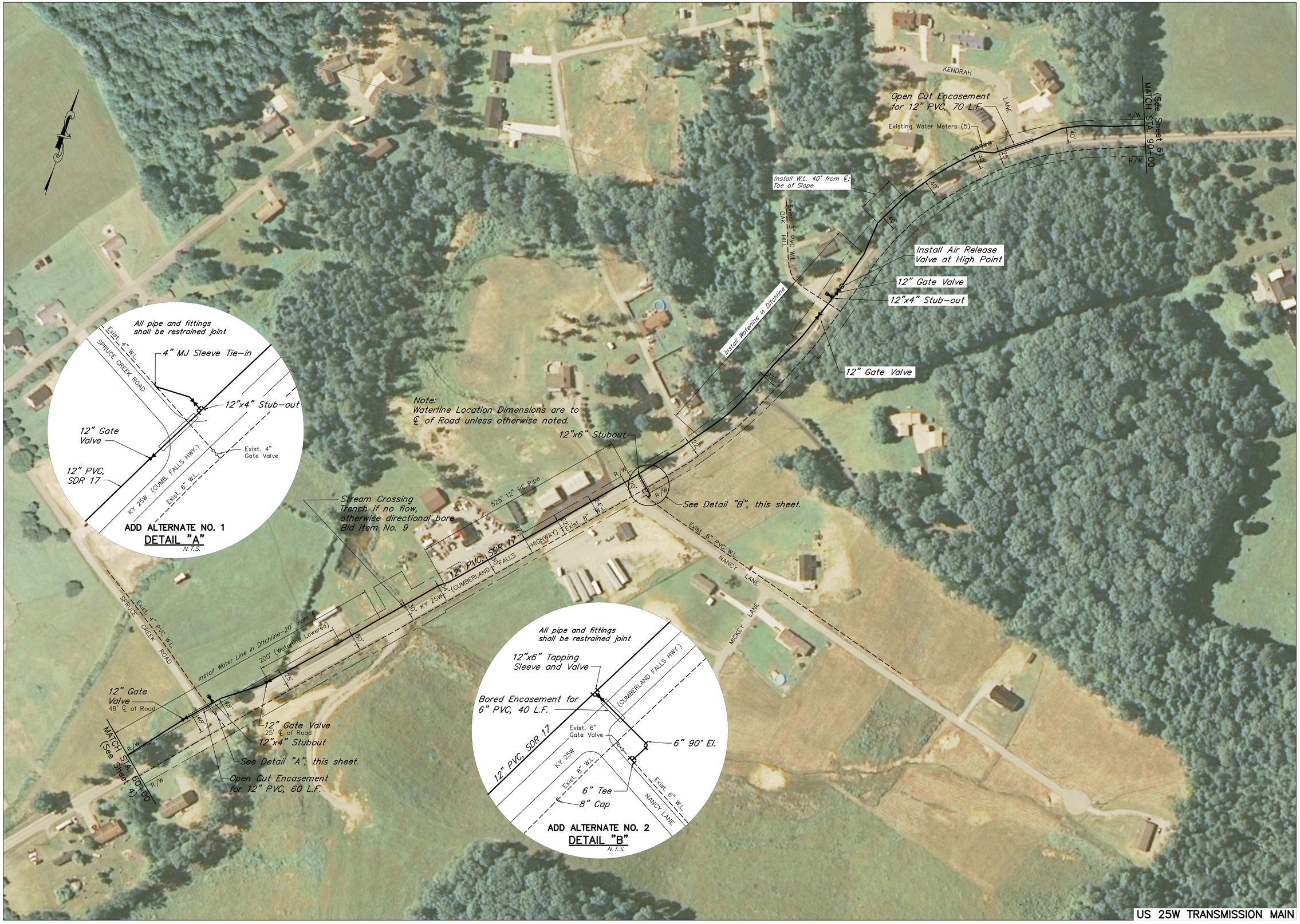
US 25W TRANSMISSION MAIN

SHEET NO. 4	PROJECT NO. 2012059	**KENVIRONS, INC.** FRANKFORT, KENTUCKY	DRAWN BY: JKP/PTH CHECKED BY: CFM CHECKED BY: DATE: April 2014 SCALE: 1"=100' REVISIONS	STATE OF KENTUCKY CARLOS F. MILLER 7384 LICENSED PROFESSIONAL ENGINEER	**CUMBERLAND FALLS HIGHWAY WATER DISTRICT** **US 25W TRANSMISSION MAIN** **WHITLEY COUNTY, KENTUCKY**

CUMBERLAND FALLS HIGHWAY WATER DISTRICT
US 25W TRANSMISSION MAIN
WHITLEY COUNTY, KENTUCKY



US 25W TRANSMISSION MAIN

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CHECKED BY:	CFM
DATE:	April 2014
SCALE:	1"=100'
REVISIONS	
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STATE OF KENTUCKY — CARLOS F. MILLER 7384 — LICENSED PROFESSIONAL ENGINEER

KENVIRONS, INC.
FRANKFORT, KENTUCKY

PROJECT NO.
2012059

SHEET NO.
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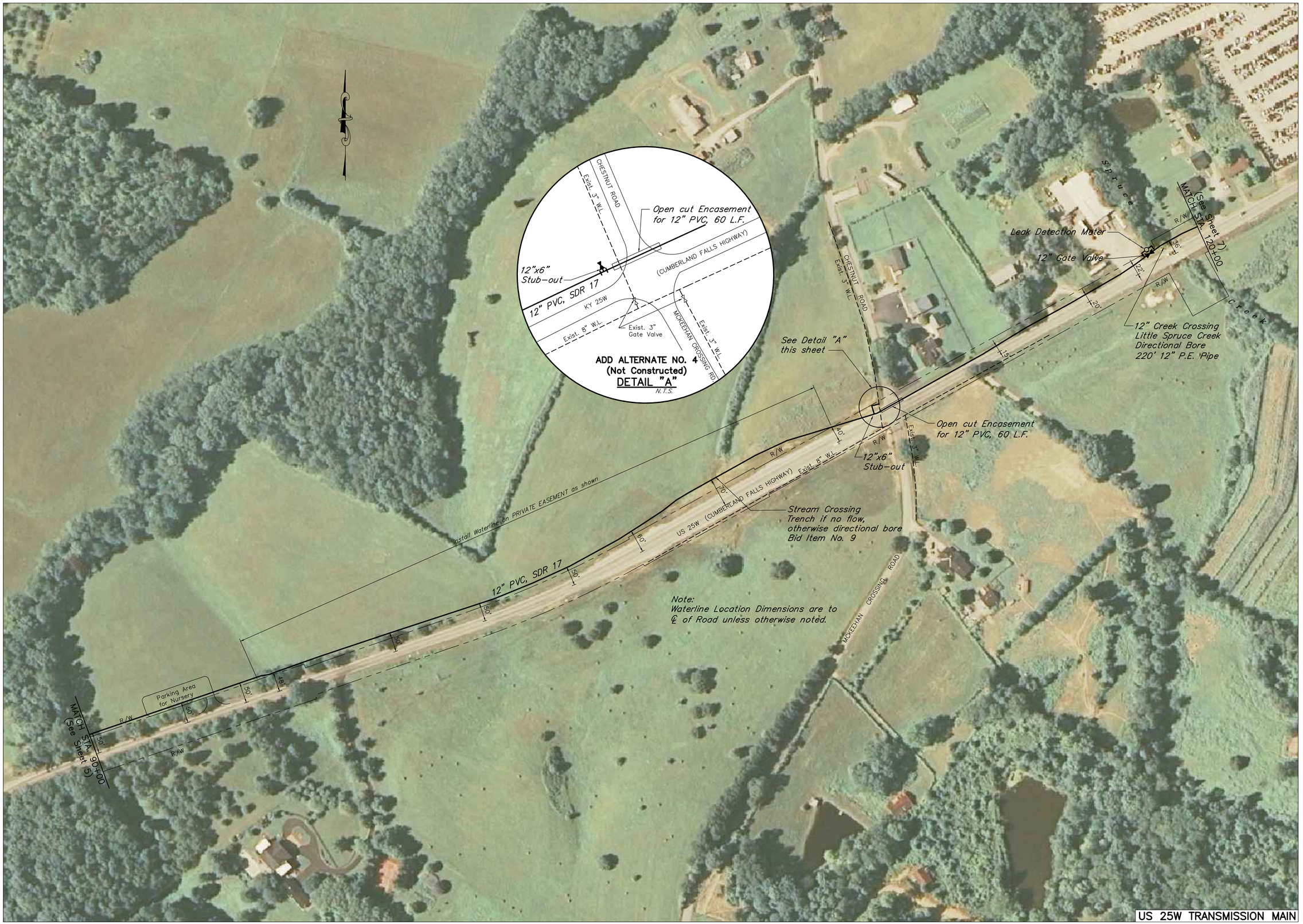
CUMBERLAND FALLS HIGHWAY WATER DISTRICT
US 25W TRANSMISSION MAIN
WHITLEY COUNTY, KENTUCKY



US 25W TRANSMISSION MAIN

STATE OF KENTUCKY
CARLOS F. MILLER
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KENVIRONS, INC.
FRANKFORT, KENTUCKY

PROJECT NO.
2012059

SHEET NO.
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CUMBERLAND FALLS HIGHWAY WATER DISTRICT
US 25W TRANSMISSION MAIN
WHITLEY COUNTY, KENTUCKY

All pipe and fittings shall be restrained joint

Bored Encasement for 6" PVC, 50 L.F.

12"x6" Stub-out

12" PVC, SDR 17

8"x6" Tee

Ex. 6" Gate Valve

6" 90° El. (typ)

6" PVC, SDR 17

(CUMB. FALLS HWY.)

Ex. 6" Gate Valve

Ex. Fire Vault

Ex. Fire Hydrant

KY 25W

Exist. 8" A.C.W.L.

Ex. 3" Gate Valve

OAK GROVE SCHOOL ROAD

Exist. 6" PVC W.L.

Exist. 3" W.L.

ADD ALTERNATE NO. 6
DETAIL "B"
N.T.S.

CAUTION:
Gas Lines in this area.

HIGHTOP ROAD

All pipe and fittings shall be restrained joint

Open cut Encasement for 12" PVC, 30 L.F.

12" PVC, SDR 17

Exist. 6" W.L.

12"x6" Stub-out

(CUMBERLAND FALLS HIGHWAY)

KY 25W

Exist. 8" W.L.

ADD ALTERNATE NO. 5
DETAIL "A"
N.T.S.

Install Air Release Valve at High Point

12" Gate Valve
40' ℄ of Road

12"x6" Stub-out
Valve 40' ℄ of Road

Install Waterline in Backside of Ditchline

See Detail "B", this sheet.

(See Sheet 8) MATCH STA. 150+00

12" Gate Valve
40' ℄ of Road

Open Cut Encasement for 12" PVC, 40 L.F.

R/W

40'

50'

12" Gate Valve
40' ℄ of Road

Exist. 6" W.L.

Exist. 3" W.L.

OAK GROVE ELEMENTARY SCHOOL

OAK GROVE ROAD

OAK GROVE SCHOOL ROAD

12" Gate Valve

12" PVC, SDR 17

Exist. 6" W.L.

Exist. 8" A.C. W.L.

12" Gate Valve

Bored Encasement for 12" PVC, 50 L.F.

See Detail "A", this sheet.

12"x6" Stub-out

DAVIS SALVAGE COMPANY

325' 12" P.E. Pipe

CEMETERY

Note:
Waterline Location Dimensions are to ℄ of Road unless otherwise noted.

US 25W (CUMBERLAND FALLS HIGHWAY)

Spruce Creek

(See Sheet 6) MATCH STA. 120+00

End 12" P.E. Waterline
Begin 12" PVC Waterline

US 25W TRANSMISSION MAIN

STATE OF KENTUCKY
CARLOS F. MILLER
7384
LICENSED PROFESSIONAL ENGINEER

DRAWN BY: JKP/PTH
CHECKED BY: CFM
DATE: April 2014
SCALE: 1"=100'

REVISIONS	DWG.
04/16 RECORD	

KENVIRONS, INC.
FRANKFORT, KENTUCKY

PROJECT NO.
2012059

SHEET NO.
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US 25W TRANSMISSION MAIN

SHEET NO. 8	PROJECT NO. 2012059	**KENVIRONS, INC.** FRANKFORT, KENTUCKY	DRAWN BY: JKP/PTH CHECKED BY: CFM CHECKED BY: DATE: April 2014 SCALE: 1"=100' REVISIONS 04/16 RECORD DWG.	STATE OF KENTUCKY CARLOS F. MILLER 7384 LICENSED PROFESSIONAL ENGINEER	**CUMBERLAND FALLS HIGHWAY WATER DISTRICT** **US 25W TRANSMISSION MAIN** **WHITLEY COUNTY, KENTUCKY**

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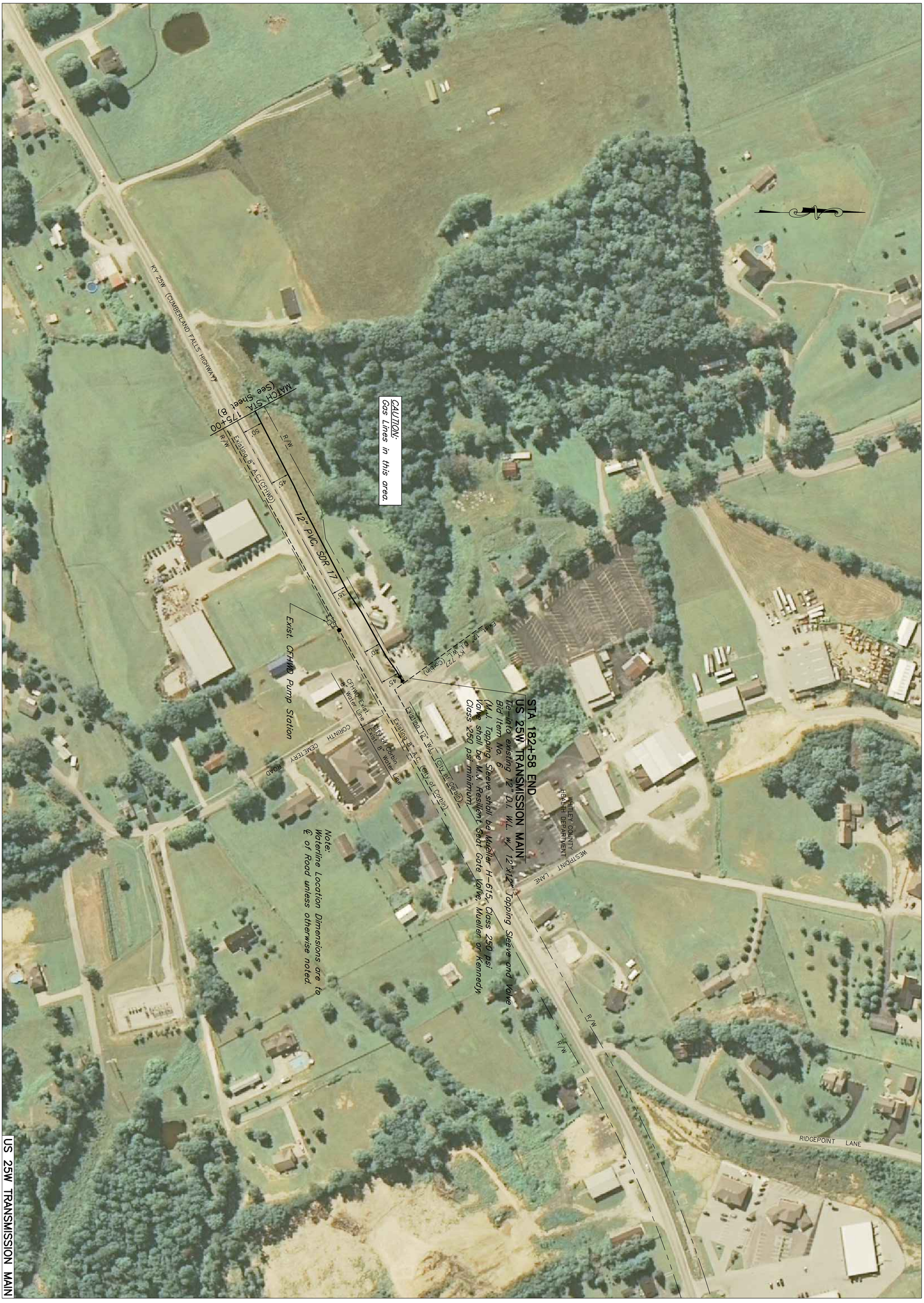

US 25W TRANSMISSION MAIN

SHEET NO. 9	PROJECT NO. 2012059	KENVIRONS, INC. FRANKFORT, KENTUCKY	DRAWN BY: JKP/PTH CHECKED BY: CFM CHECKED BY: DATE: April 2014 SCALE: 1"=100' REVISIONS 05/15 RECORD DWG.	STATE OF KENTUCKY CARLOS F. MILLER 7384 LICENSED PROFESSIONAL ENGINEER	CUMBERLAND FALLS HIGHWAY WATER DISTRICT US 25W TRANSMISSION MAIN WHITLEY COUNTY, KENTUCKY

NOTES:

1. Bid Item No. 12 shall include the underground pump station, underground back-flow preventer vault, piping, valves, electrical work and all appurtenances from the 12"x12" Stub-outs north.

2. All field pipe joints shall be restrained with Locking Gaskets, EBBA Iron Mega Lug or approved equal.

Exist. R/W (N48° 54' 13" E - 62.2'±)

Exist. R/W Marker

Exist. R/W (N 58° 01' 44" E - 201.8'±)

65'

Back-flow Preventer Vault, See Detail, Sht. D-3

Underground Pump Station, See Sht. PS-2

Control Panel

Exist. R/W Marker

Exist. R/W (N 59° 57' 00" E)

Exist. 24" CMP

Exist. Drive

12"x6" Reducer

12"x10" Reducer

8"x6" Reducer

12" D.I.

12" D.I.

Fire Hydrant

Utility Pole

12" Gate Valve

12" PVC, SDR 17

12" PVC, SDR 17

12"x12" Stub-out

12"x12" Stub-out

35'

30'

25'

32'

24'

28'

Exist. 15" CMP

1150

1155

1160

1160

BM #1

Exist. Guardrail

KY 25W (CUMBERLAND FALLS HIGHWAY)

BM #2

Exist. Guardrail

BM #1:
Elev. 1159.76
R.R. Spike in edge of Gravel Drive

BM #2:
Elev. 1162.03
P.K. Nail at edge of pavement 6' from end of guardrail

10 0 5 10 20 40

(SCALE IN FEET)
1 inch = 10 ft.

Exist. Headwall

Exist. Culvert

PUMP STATION SITE PLAN

CUMBERLAND FALLS HIGHWAY WATER DISTRICT
US 25W TRANSMISSION MAIN
WHITLEY COUNTY, KENTUCKY

COMMONWEALTH OF KENTUCKY
CARLOS F. MILLER
7384
LICENSED PROFESSIONAL ENGINEER

DRAWN BY: JKP	
CHECKED BY: CFM	
DATE: August 2014	
SCALE: As Noted	
REVISIONS	
04/16 RECORD DWG.	

KENVIRONS, INC.
FRANKFORT, KENTUCKY

PROJECT NO.
2012059

SHEET NO.
PS-1

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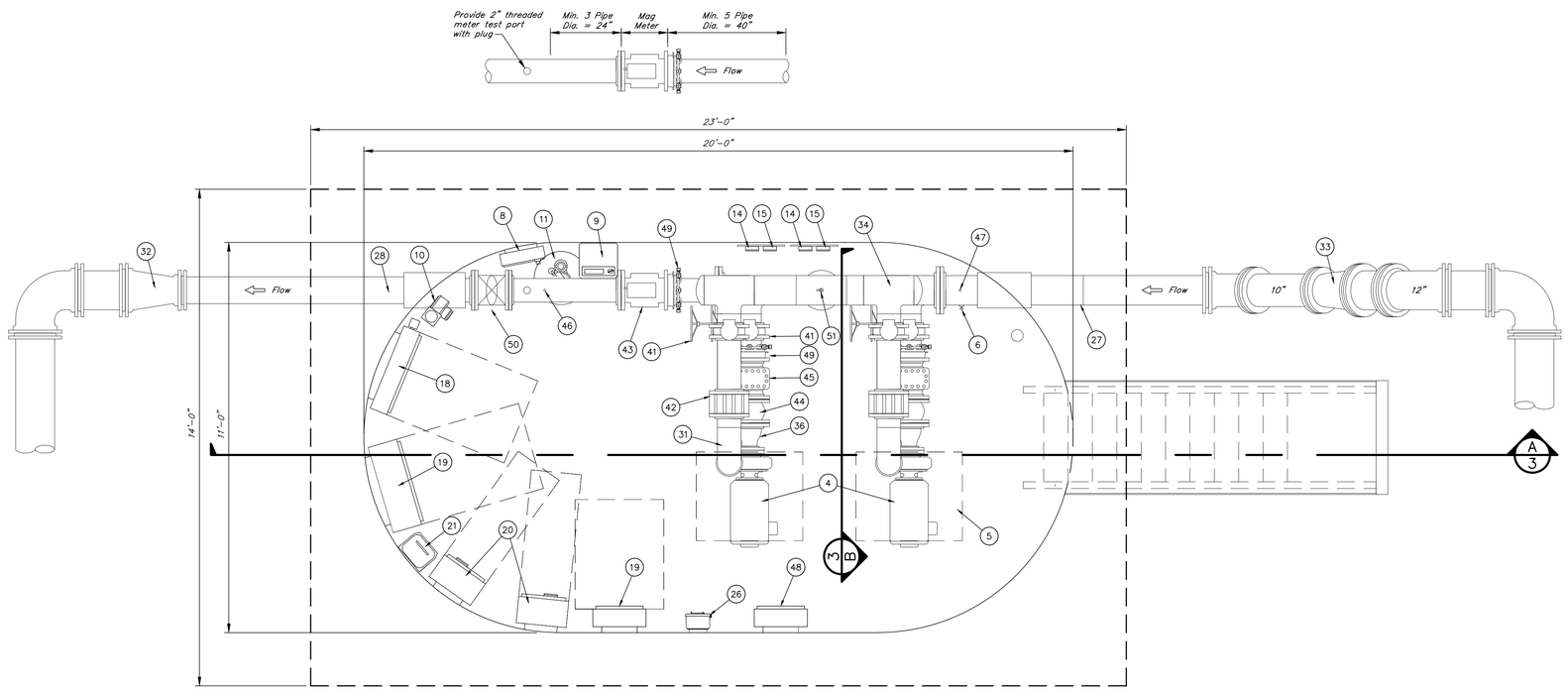
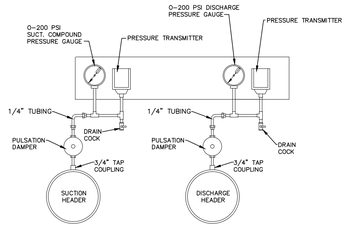


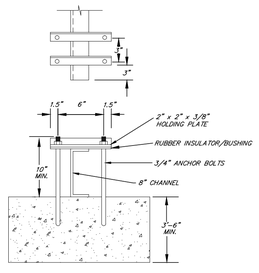
PUMP STATION PLAN

Scale: 1/2"=1'-0"

ITEM	QUANITY	DESCRIPTION
1	1	STEEL CHAMBER – 3/8" PLATE TOP, BOTTOM, SIDES AND ENDS W/ 8" TOP REINF,
	–	6" SIDE REINF, AND 8" BOTTOM REINF
2	1	BILCO L–50 ALUMINUM ENTRANCE
3	1	ENTRANCE STAIR ASSEMBLY
4	2	PUMPS & MOTORS , 30 HP, 1800 RPM, 480V/3PH/60HZ
		CONDITIONS – 800 GPM @ 101' TDH
5	2	BILCO S–50 EQUIPMENT HATCH (CENTERED OVER PUMPS)
6	1	HOSE BIBB
7	5	FLOURSCENT LIGHTS
8	1	3000 WATT HEATER
9	1	DEHUMIDIFIER (DRAIN TO SUMP)
10	1	VENTILATION BLOWER W/ VENT PIPING
11	1	SUMP WELL W/ SUMP PUMP AND 1–1/4" PVC DISCHARGE PIPING
12	1	8" BACKFLOW PREVENTER, AMES COMPANY SERIES 2000SS OR EQUAL
13	1	DRY WELL FLOAT
14	2	PRESSURE GAUGES
15	2	PRESSURE TRANSMITTERS
16	2	1" AIR RELEASE VALVE WITH ISOLATION VALVE (PIPE TO SUMP)
17		NOT USED
18	1	CONTROL PANEL
19	1	POWER DISTRIBUTION / LOAD CENTER PANEL
20	2	VARIABLE SPEED DRIVES
21	1	SINGLE PHASE TRANSFORMER
22		NOT USED
23	–	FUSION BONDED INTERNAL PIPE COATING
24	–	DEVOE / SHERWIN WILLIAMS PAINT COATINGS
25	6	CATHODIC PROTECTION
26	1	ANODE TEST BOX – CATHODIC PROTECTION
27	1	10" PLAIN END SUCTION PIPE
28	1	8" PLAIN END DISCHARGE PIPE
29		NOT USED
30		NOT USED
31	3	8" WELD ELBOWS
32	1	12"X8" M.J. REDUCER
33	1	12"X10" M.J. REDUCER
34	5	10"X10"X8" WELD TEE
35		NOT USED
36	2	8"X5" ECN WELD REDUCERS
37	2	8"X4" CONC WELD REDUCERS
38	2	8" FLANGED COUPLING ADAPTOR
39		NOT USED
40	1	10" BUTTERFLY VALVE W/ GEAR OPERATOR
41	4	8" BUTTERFLY VALVES W/ GEAR OPERATORS
42	2	8" FLANGED GLOBE STYLE SILENT CHECK VALVES
43	1	8" MAGNETIC FLOW METER
44	2	8" RESTRAINED METRASPHERE COUPLINGS
45	2	8" PLATE STRAINER
46	1	COMMON DISCHARGE PRESSURE TAP
47	1	COMMON SUCTION PRESSURE TAP
48	1	TELEMETRY PANEL
49	3	RESTRAINED FLANGED COUPLING ADAPTOR
50	1	8" GATE VALVE
51	1	MANUAL AIR RELEASE VALVE
52	1	LOW PRESSURE SWITCH, CIRCUIT, LIGHTS & SCADA CONTACTS AT EACH PUMP

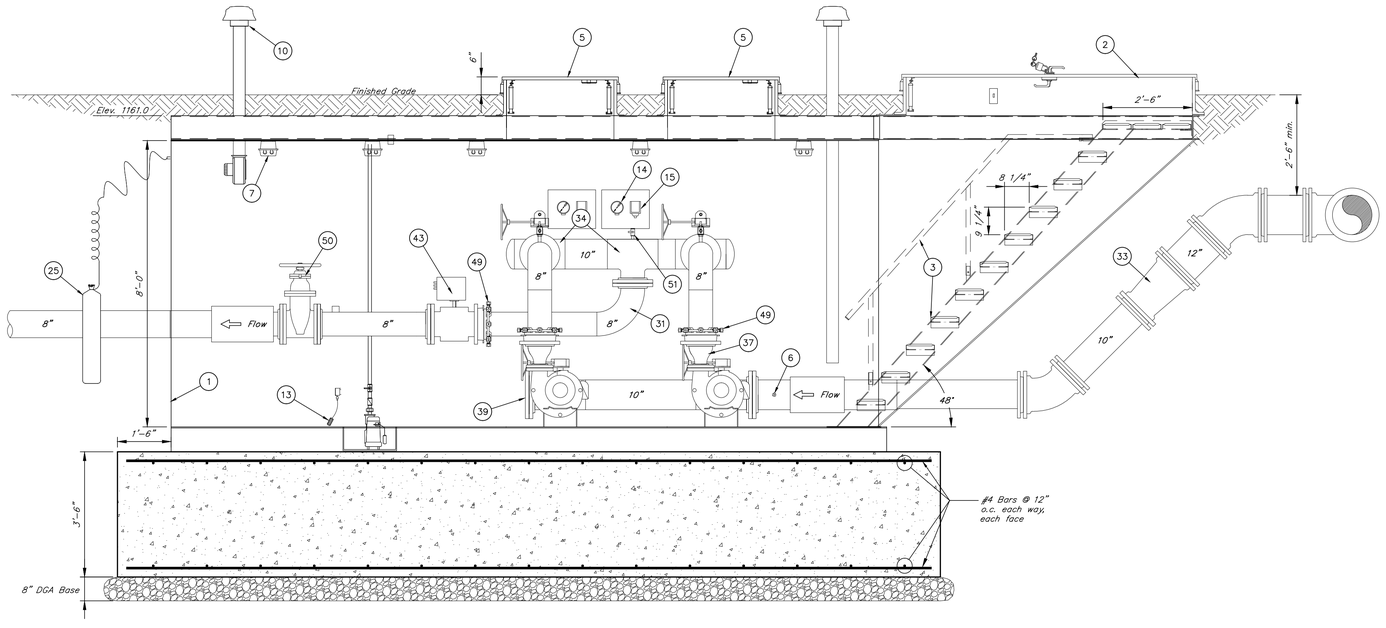


SUCTION/DISCHARGE PRESSURE GAUGE/TRANSMITTER DETAIL



ANCHOR DETAIL

N.T.S.

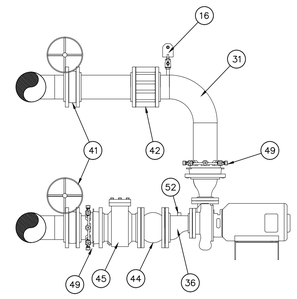


A/4 SECTION

Scale" 1/2"=1'-0"

NOTES:

1. All joints within the pump station shall be flanged or restrained for 200 psi minimum.
2. Gaskets for flanged pipe shall be full face gaskets equal to TORUSEAL by American Cast Iron Pipe Co.



SECTION B/4

Scale" 1/2"=1'-0"

PUMP STATION PLAN AND SECTIONS

CUMBERLAND FALLS HIGHWAY WATER DISTRICT
US 25W TRANSMISSION MAIN
WHITLEY COUNTY, KENTUCKY

COMMONWEALTH OF KENTUCKY — CARLOS F. MILLER 7384 — LICENSED PROFESSIONAL ENGINEER

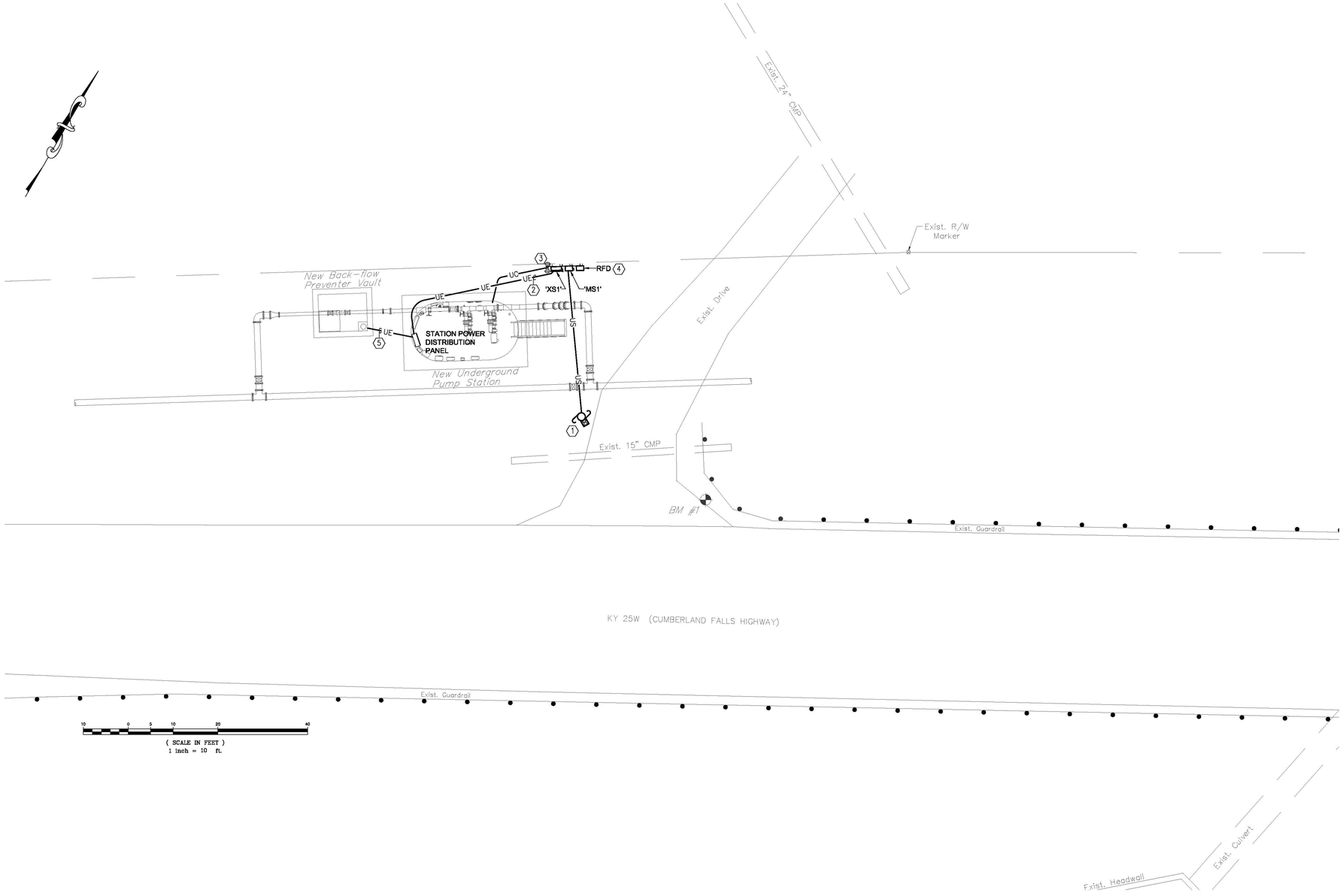
DRAWN BY: JKP
CHECKED BY: CFM
DATE: August 2014
SCALE: As Noted
REVISIONS

KENVIRONS, INC.
FRANKFORT, KENTUCKY

PROJECT NO.
2012059

SHEET NO.
PS–2

N:\P-2012050\Plans\RECORD\PS-2 Pump Station-RD.dwg, 4/26/2016 3:03:38 PM, PTH



SITE PLAN - ELECTRICAL

SCALE: 1" = 10'

SHEET NOTES

1. FURNISH AND INSTALL NEW SECONDARY SERVICE DROP. SEE RISER DIAGRAM FOR METERING AND CONDUIT REQUIREMENTS. COORDINATE EXACT POLE LOCATION AND NEW SERVICE INSTALLATION WITH POWER CO. AND OWNER IN FIELD.
2. NEW UNDERGROUND SECONDARY SERVICE TO NEW MAIN SWITCH 'MS1'. SEE ONE LINE RISER ON SHEET E-2.
3. NEW TELEMETRY SYSTEM ANTENNA. COORDINATE LOCATION AND SUPPORT WITH SYSTEM SUPPLIER.
4. NEW REMOTE FLOW DISPLAY. SEE RISER, SHT.E-2.
5. POWER TO VAULT SUMP PUMP. SEE RISER, SHT E-2.

GENERAL NOTES

1. ALL CONDUIT, ABOVE EXTERIOR GRADE TO 18" BELOW GRADE SHALL BE RIGID ALUMINUM UNLESS OTHERWISE NOTED.
2. ALL ELECTRICAL EQUIPMENT, WIRE AND CONDUIT REMOVED DURING CONSTRUCTION OF THIS PROJECT SHALL BECOME THE PROPERTY OF THE OWNER AND SHALL BE STORED AS DIRECTED.
3. THE EXISTING CONDITIONS AS SHOWN ON THESE PLANS HAVE BEEN FORMULATED THROUGH REVIEW OF OLD PLANS, DISCUSSIONS WITH CITY PERSONNEL AND DATA GATHERED BY FIELD SURVEYS.
4. THE CONTRACTOR SHALL VERIFY EXISTING AND FINAL CONTOURS AND ELEVATIONS.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING AND VERIFYING ALL EXISTING LINES, ELECTRICAL CONDUITS AND ANY OTHER ITEMS THAT WILL BE EFFECTED BY THE CONSTRUCTION OF ELECTRICAL SYSTEMS FOR THIS PROJECT.
6. CONTRACTOR SHALL FURNISH AND INSTALL PULL BOXES, BOTH INTERIOR AND EXTERIOR INCLUDING GRADE MOUNT, AS REQUIRED FOR ALL POWER AND CONTROL CIRCUITS.
7. CONTRACTOR SHALL REFER TO OTHER DRAWINGS AND SPECIFICATIONS FOR ADDITIONAL ELECTRICAL REQUIREMENTS.

AFA ENGINEERING, LLC
CONSULTING ENGINEERS
HVAC – PLUMBING – ELECTRICAL
706 WESTLAND DRIVE
LEXINGTON, KENTUCKY 40504
PHONE (859) 255-4437

SITE PLAN – ELECTRICAL

CUMBERLAND FALLS HIGHWAY WATER DISTRICT
US 25W TRANSMISSION MAIN
WHITLEY COUNTY, KENTUCKY

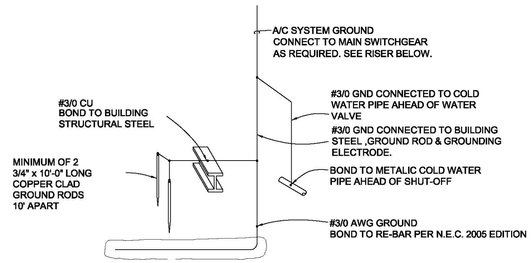
STATE OF KENTUCKY
THOMAS B. WILSON, JR. 19017
LICENSED PROFESSIONAL ENGINEER

DRAWN BY:
CHECKED BY:
CHECKED BY:
DATE: December 2014
SCALE: As Noted
REVISIONS

KENVIRONS, INC.
FRANKFORT, KENTUCKY

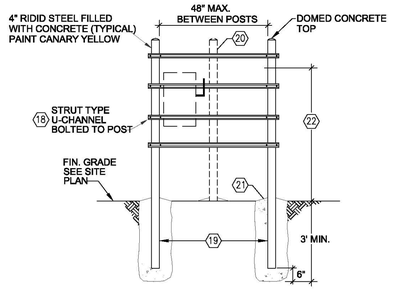
PROJECT NO.
2012059

SHEET NO.
E-1



MAIN SERVICE AC SYSTEM GROUND

SCALE: NTS



TYPICAL EQUIPMENT SUPPORT DETAIL

SCALE: NTS

ELECTRICAL LEGEND

- LIGHT SWITCH – SINGLE POLE, 3–WAY, 4–WAY, KEY OPERATED
- MANUAL MOTOR STARTER SWITCH
- FAN SPEED CONTROL
- DUPLEX RECEPTACLE
- SINGLE RECEPTACLE
- DUPLEX G.F.I. RECEPTACLE
- JUNCTION BOX
- THERMOSTAT : HUMIDISTAT
- DISCONNECT SWITCH
- EXPLOSION PROOF DISCONNECT SWITCH
- COMBINATION MOTOR STARTER
- VFD — VARIABLE FREQUENCY DRIVE
- EQUIPMENT CONNECTION
- MOTOR CONNECTION
- CONDUIT CONCEALED BELOW SLAB OR GRADE
- CONDUIT SEAL – CLASS 1 DIVISION 1
- CONDUIT TURNED UP
- CONDUIT TURNED DOWN
- CORD & PLUG CONNECTION TO RECEPTACLE
- CONDUIT CONCEALED IN WALL OR CEILING
  NO. SLASHES EQUALS NO. CONDUCTORS – MIN. #12 AWG
  WIRE SIZE IF OTHER THAN #12
  NO. ARROWS EQUALS NO. CIRCUITS
  1,3,5 – INDICATES POLE POSITIONS
  A – INDICATES PANEL NO.
  (A-1,3,5)
- T1 — TRANSFORMER
- BC — BATTERY CHARGER
- MPZ — COMBINATION TRANSFORMER/PANEL (SQUARE D MINI POWER–ZONE OR EQUAL)
- UTILITY CO. POWER POLE
- UTILITY CO. METER
- PT — PRESSURE TRANSDUCER
- TELEMETRY ANTENNA
- TELEMETRY ANTENNA SUPPORT POLE/ TOWER
- STATION DOOR OPEN–CLOSED STATUS CONTACTS
- M — MOTORIZED DAMPER
- C — CONTACTS
- E — CONCRETE PULL BOX – FIN. GRADE MOUNTED
- I_M — INTERCOM SYSTEM MASTER WITH KEYPAD
- I_R — INTERCOM SYSTEM REMOTE
- I_B — INTERCOM SYSTEM BUZZER
- R — RELAY
- 3 T/S — TWISTED SHIELDED PAIR CABLE NUMBER = NO. CABLES IF MORE THAN ONE
- MANUAL TRANSFER SWITCH
- EQUIPMENT SUPPORT
- G — GENERATOR
- FOT — FUEL OIL TANK
- TVSS TYPE 1 — SURGE PROTECTIVE DEVICE (TRANSIENT VOLTAGE SURGE SUPRESSOR) TYPE AS NOTED
- SCADA SYSTEM ANTENNA, INSTALL WITH COAXIAL CABLE IN 1 1/4"C. PER SYSTEM SUPPLIER
- RFD — REMOTE FLOW DISPLAY
- OP — OVERHEAD PRIMARY
- UP — UNDERGROUND PRIMARY
- OS — OVERHEAD SECONDARY
- US — UNDERGROUND SECONDARY
- OT — OVERHEAD TELEPHONE
- UT — UNDERGROUND TELEPHONE
- UE — UNDERGROUND ELECTRIC
- UC — UNDERGROUND CONTROL

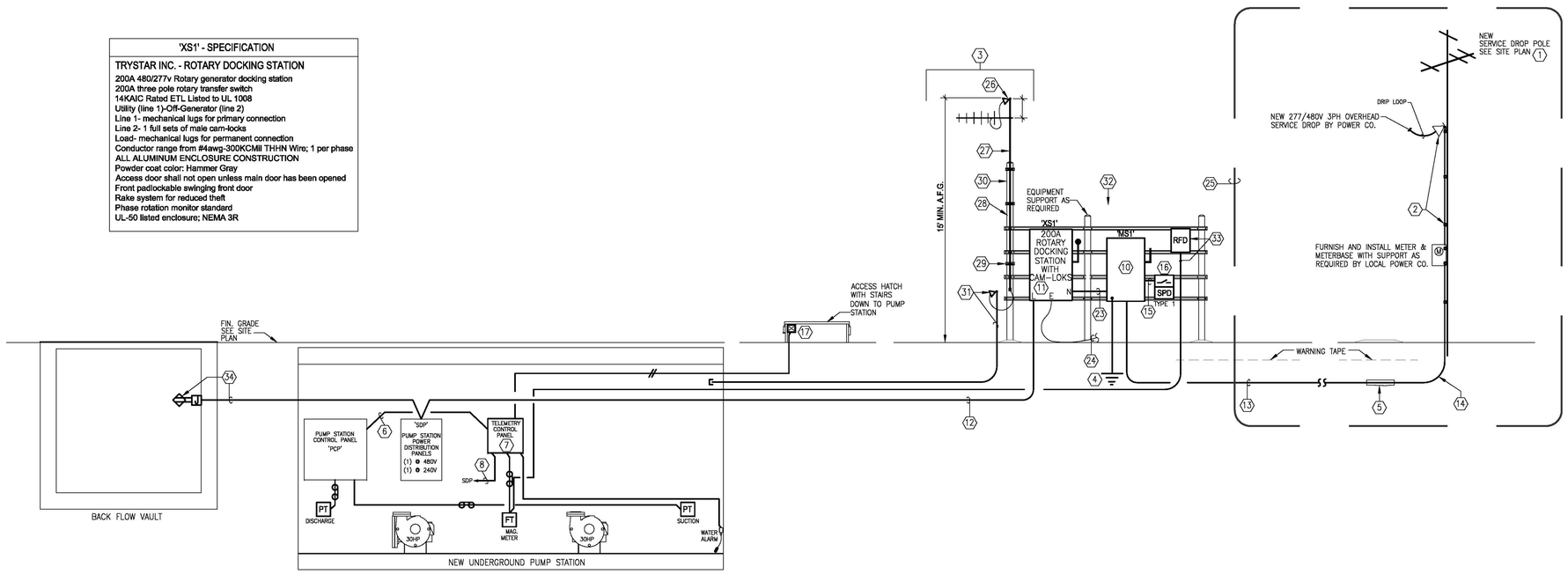
C.	CONDUIT
W	WIRE
PH	PHASE
EC	ELECTRICAL CONTRACTOR
CKT	CIRCUIT
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
WP	WEATHERPROOF
WPI	WEATHERPROOF IN–USE TYPE COVER
FUT.	FUTURE
OHS	OVERHEAD SECONDARY SERVICE
OHP	OVERHEAD PRIMARY
US	UNDERGROUND SECONDARY SERVICE
UP	UNDERGROUND PRIMARY
OHT	OVERHEAD TELEPHONE SERVICE
UT	UNDERGROUND TELEPHONE SERVICE
S.E.	SERVICE ENTRANCE
TYP.	TYPICAL
N,L,E,C,	TRANSFER SWITCH – NORMAL, LOAD, EMERGENCY, CONTROL
GRD	GROUND

XP	EXPLOSION PROOF
SV	SOLENOID VALVE
MV	MOTORIZED VALVE
CR	CORROSION RESISTANT
ENCL	ENCLOSURE
CB	CIRCUIT BREAKER
SWD	SWITCHING DUTY
EUH	ELECTRIC UNIT HEATER
S.S.	STAINLESS STEEL
RTU	REMOTE TERMINAL UNIT
MCP	MAIN CONTROL PANEL
FCC	FILTER CONTROL CONSOLE
GRS	GALVANIZED RIGID STEEL
RAC	RIGID ALUMINUM CONDUIT
CP	CONTROL PANEL
PCP	PUMP CONTROL PANEL
LCP	LEVEL CONTROL PANEL
E.T.	ELAPSED TIME

SHEET NOTES

1. VERIFY EXACT POLE LOCATION WITH POWER CO. IN FIELD.
2. FURNISH AND INSTALL RISER WITH WEATHERHEAD TO HEIGHT AS REQUIRED BY LOCAL POWER CO. SECURE TO POLE AS REQUIRED.
3. VERIFY EXACT ANTENNA INSTALLATION REQUIREMENTS (YAGI/VERTICAL ANTENNA & POLE/TOWER MOUNT) WITH TELEM. SYSTEM SUPPLIER PRIOR TO BID AND FURNISH AND INSTALL COMPLETE SUPPORT SYSTEM AS REQUIRED.
4. FURNISH AND INSTALL AC SYSTEM GROUND PER 2014 N.E.C. SEE DETAIL THIS SHEET FOR ADDITIONAL REQUIREMENTS.
5. CONCRETE ENCASE CIRCUITS MIN. 6" ALL AROUND WHERE RUN BELOW DRIVES/ROADWAYS.
6. FURNISH AND INSTALL WIRE AND SHIELDED CABLES AS REQUIRED IN (2) 1"C FOR TELEMETRY CONTROL SIGNALS TO/FROM 'PCP'.
7. FURNISH AND INSTALL NEW TELEM. SYSTEM RTU AS REQUIRED.
8. 3 #12, 1 #12GRD., 1"C.; 120VAC FOR TELEM. PANEL POWER.
9. VERIFY TELEMETRY ANTENNA SUPPORT (PIPE MAST, POLE OR TOWER) FOR THIS LOCATION WITH TELEMETRY EQUIPMENT SUPPLIER AND INSTALL PER MFGR. INSTRUCTIONS. INSTALL STEEL REINFORCED CONCRETE BASE WHERE TOWER INSTALLATION IS REQUIRED.
10. FURNISH AND INSTALL 200A, 3P, 600V, NEMA 4, S.E. RATED FUSIBLE MAIN DISCONNECT SWITCH. FUSE AT 200A WITH TYPE 'R' FUSE FOR 100,000 A.I.C. RATING.
11. FURNISH AND INSTALL 200A, 277/480V, NEMA 3R COMBINATION ROTARY TRANSFER SWITCH/DOCKING STATION. ALUMINUM ENCLOSURE. SEE SPEC, THIS SHEET.
12. 4 #3/0, 1 #6GRD., 2"C.
13. 4 #3/0, 2"C.
14. INSTALL LONG RADIUS ELLS, TYPICAL.
15. 5 #6, 1 1/4"C.
16. FURNISH AND INSTALL SURGE PROTECTOR IN NEMA 4 ENCLOSURE WITH INTEGRAL DISCONNECT SWITCH.
17. FURNISH AND INSTALL DOOR CONTACTS/LIMIT SWITCH AS REQUIRED FOR HATCH STATUS INDICATION THRU TELEMETRY SYSTEM.
18. FURNISH AND INSTALL MINIMUM (4) U-CHANNEL SPANS BETWEEN POSTS AND ADD ADDITIONAL AS REQUIRED FOR SUPPORT OF EQUIPMENT AND CONDUITS.
19. PAINT RGS POSTS WITH MIN. 2 COATS OF BITUMASTIC WHERE IN CONTACT WITH CONCRETE.
20. FURNISH AND INSTALL ADDITIONAL SUPPORT POST WITH CONCRETE BASE WHERE SPAN EXCEEDS 48" AND ADDITIONAL POSTS AS REQUIRED SUCH THAT NO SPAN BETWEEN POSTS EXCEEDS 48".
21. FURNISH AND INSTALL 18" DIAMETER BY 30" DEEP CONCRETE BASE FOR EACH SUPPORT POST REQUIRED. BASES SHALL BE A SINGLE HOMOGENEOUS CONCRETE POUR.
22. 6'-6" MAXIMUM HEIGHT TO TOP OF ELECTRICAL EQUIPMENT.
23. 4 #3/0, 1 #4GRD., 2"C.
24. CABLES FROM PORTABLE GENSET.
25. FURNISH AND INSTALL NEW 120/240V, 1PH SERVICE WITH SIMILAR POLE, METERING, SECONDARY SERVICE AND NEMA 3R, 120/240V, 1PH, S.E. RATED, 100A MAIN BREAKER PANEL WITH 12 SPACES AND (4) 20A, 1P BRANCH BREAKERS AT INSTALLATION OF NEW SOLENOID VALVE VAULT WITH SUMP PUMP AT EXIST. PUMP STATION TO BE REMOVED. SEE OTHER DRAWINGS ASSOCIATED WITH THIS CONTRACT FOR LOCATION AND ADDITIONAL REQUIREMENTS. NEW SEC. SERVICE TO PANEL SHALL BE 3 #1, 1 #6 GRD., 2"C. COORDINATE WITH G.C. & LOCAL POWER CO. INSTALL POWER CIRCUITS FROM NEW PANEL USING 2 #10, 1 #10GRD., 1"C. TO SOLENOID VALVE AND TO VAULT SUMP PUMP AS REQUIRED.
26. FURNISH AND INSTALL WEATHERHEAD ON TOP OF PIPE MAST FOR COAXIAL CABLE.
27. FURNISH AND INSTALL 2" RGS CONDUIT MAST FOR INSTALLATION OF COAXIAL CABLE AND ANTENNA SUPPORT. COORDINATE INSTALLATION WITH TELEMETRY SYSTEM SUPPLIER.
28. MIN. 4' OVERLAP OF SUPPORT MAST WITH BLACK STEEL PIPE EQUIPMENT SUPPORT POST REQUIRED.
29. SECURE ANTENNA MAST TO EQUIPMENT SUPPORT POST U-CHANNEL AT MINIMUM 4 LOCATIONS.
30. CONTRACTOR MAY AT HIS OPTION EXTEND LENGTH OF OF EQUIPMENT SUPPORT POST MAX. OF 48" TO ALLOW FOR INSTALLATION OF ANTENNA MAST.
31. FURNISH AND INSTALL WEATHERHEAD AND 1 1/2"C. WITH COAXIAL CABLE TO TELEMETRY (RTU) SYSTEM ANTENNA. COORDINATE WITH OWNER AND TELEM. EQUIPMENT SUPPLIER.
32. ALL EQUIPMENT CABINETS ON THIS SUPPORT STRUCTURE SHALL HAVE LOCKABLE COVERS.
33. FURNISH AND INSTALL NEMA 4 STAINLESS STEEL ENCLOSURE FOR HOUSING REMOTE FLOW TOTALIZER DISPLAY. SIZE AS REQUIRED. FURNISH AND INSTALL WIRE/CABLE IN 1"C. AS REQUIRED.
34. FURNISH AND INSTALL GFCI TYPE RECEPTACLE WITH WEATHERPROFF IN-USE COVER AS HIGH AS POSSIBLE IN VAULT FOR SUMP PUMP CONNECTION. CIRCUIT USING 2 #12, 1"C. TO STATION POWER PANEL.

'XS1' - SPECIFICATION
TRYSTAR INC. - ROTARY DOCKING STATION
200A 480/277v Rotary generator docking station
200A three pole rotary transfer switch
14KAIC Rated ETL Listed to UL 1008
Utility (line 1)-Off-Generator (line 2)
Line 1- mechanical lugs for primary connection
Line 2- 1 full sets of male cam-locks
Load- mechanical lugs for permanent connection
Conductor range from #4awg-300KCMil THHN Wire; 1 per phase
ALL ALUMINUM ENCLOSURE CONSTRUCTION
Powder coat color: Hammer Gray
Access door shall not open unless main door has been opened
Front padlockable swinging front door
Rake system for reduced theft
Phase rotation monitor standard
UL-50 listed enclosure; NEMA 3R



ONE LINE POWER RISER

SCALE: NTS

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RISER & DETAILS – ELECTRICAL

CUMBERLAND FALLS HIGHWAY WATER DISTRICT
US 25W TRANSMISSION MAIN
WHITLEY COUNTY, KENTUCKY

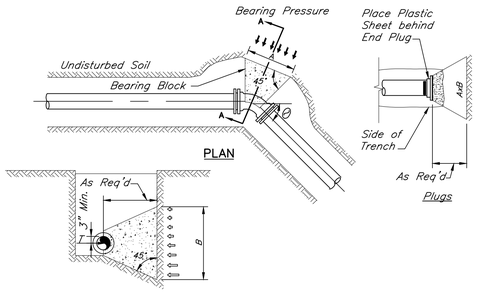
STATE OF KENTUCKY
THOMAS B. WILSON, JR.
9017
LICENSED PROFESSIONAL ENGINEER

DRAWN BY: TN
CHECKED BY: TW
DATE: December 2014
SCALE: As Noted
REVISIONS

KENVIRONS, INC.
FRANKFORT, KENTUCKY

PROJECT NO.
2012059

SHEET NO.
E-2



SECTION A–A

NOTES:

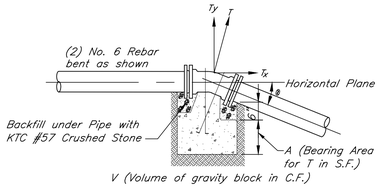
1. Thrust restraint table is based on pipeline pressure of 200 psi and earthbearing capacity of 1500 psf. During construction, the specific soil type may be evaluated and concrete thrust block size revised at the discretion of the engineer.
2. On large diameter pipes where space limitations or constuction difficulties render concrete thrust blocks not feasible or impractical, joint system may be used. This restrained joint system must be approved by the Engineer.
3. Concrete shall be 3000 psi minium conforming to KTC Specifications 601.
4. Accessibility to fittings and bolts must be maintained.
5. Wrap fittings in plastic prior to placing concrete.

HORIZONTAL THRUST BLOCK SCHEDULE

PIPE SIZE (INCHES)	90° BEND		45° BEND		22 1/2° BEND		11 1/4° BEND		TEE, DEAD END	
	A	B	A	B	A	B	A	B	A	B
3 & 4	3'–3"	1'–8"	2'–4"	1'–2"	1'–8"	1'–0"	1'–0"	1'–0"	2'–8"	1'–4"
6	4'–8"	2'–4"	3'–5"	1'–8"	2'–6"	1'–3"	1'–6"	1'–0"	3'–10"	2'–0"
8	6'–0"	3'–0"	4'–5"	2'–3"	3'–2"	1'–7"	2'–3"	1'–2"	5'–0"	2'–6"
10	7'–6"	3'–9"	5'–5"	2'–9"	3'–10"	2'–0"	2'–9"	1'–5"	6'–3"	3'–2"
12	8'–10"	4'–5"	6'–6"	3'–3"	4'–8"	2'–4"	3'–4"	1'–8"	7'–5"	3'–9"
14	10'–3"	5'–2"	7'–6"	3'–9"	5'–4"	2'–8"	3'–10"	2'–0"	8'–8"	4'–4"
16	11'–8"	5'–10"	8'–7"	4'–4"	6'–1"	3'–0"	4'–4"	2'–2"	9'–9"	4'–11"
18	13'–0"	6'–6"	9'–7"	4'–9"	6'–10"	3'–5"	4'–10"	2'–5"	11'–0"	5'–6"
20	14'–5"	7'–3"	10'–7"	5'–4"	7'–7"	3'–9"	5'–4"	2'–8"	12'–2"	6'–1"
24	17'–3"	8'–8"	12'–8"	6'–4"	9'–0"	4'–6"	6'–5"	3'–3"	14'–6"	7'–3"

HORIZONTAL THRUST BLOCK

July, 2011 Scale: 3/8"=1'–0"



GRAVITY THRUST BLOCK

NOTES:

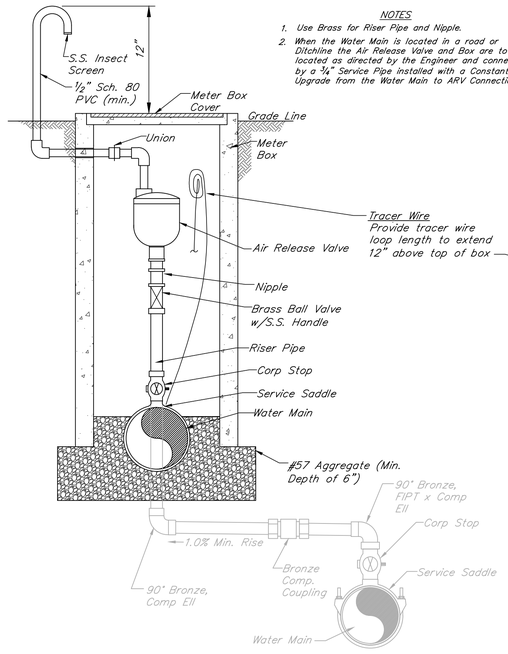
1. Thrust restraint table is based on pipeline pressure of 200 psi and earth bearing capacity of 1500psf. During construction, the specific soil type may be evaluated and concrete thrust block size revised at the discretion of the engineer.
2. On large diameter pipes where space limitations or constuction difficulties render concrete thrust blocks not feasible or impractical, joint system may be used. This restrained joint system must be approved by the Engineer.
3. Concrete shall be 3000 psi minium conforming to KTC Specifications 601.
4. Accessibility to fittings and bolts must be maintained.
5. Wrap fittings in plastic prior to placing concrete.

VERTICAL THRUST BLOCK SCHEDULE

PIPE SIZE (INCHES)	90° BEND		45° BEND		22 1/2° BEND		11 1/4° BEND	
	V	A	V	A	V	A	V	A
3 & 4	29	2	20	1	11	1	6	1
6	64	5	46	2	25	1	13	1
8	114	8	81	4	43	1	23	1
10	174	12	123	5	66	2	35	1
12	248	17	176	8	95	2	50	1
14	337	23	238	10	128	3	67	1
16	439	29	311	13	167	4	88	1
18	555	37	393	16	211	5	111	1
20	685	46	484	20	260	6	137	2
24	985	66	696	29	374	8	197	2

VERTICAL THRUST BLOCK

July, 2011 Scale: 1/2"=1'–0"

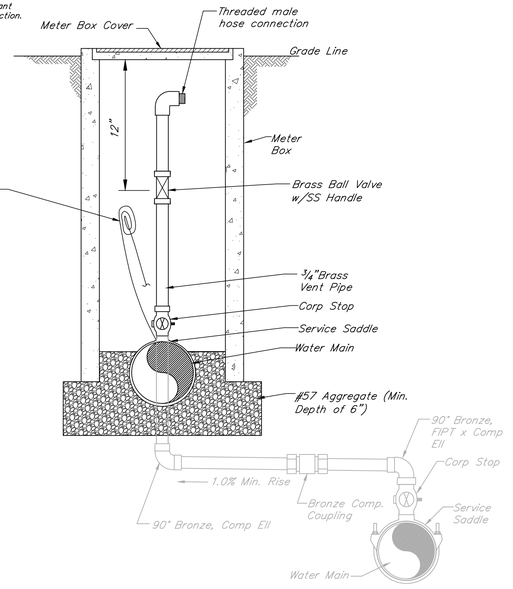


NOTES

1. Use Brass for Riser Pipe and Nipple.
2. When the Water Main is located in a road or Ditchline the Air Release Valve and Box are to be located as directed by the Engineer and connected by a ¾" Service Pipe installed with a Constant Upgrade from the Water Main to ARV Connection.

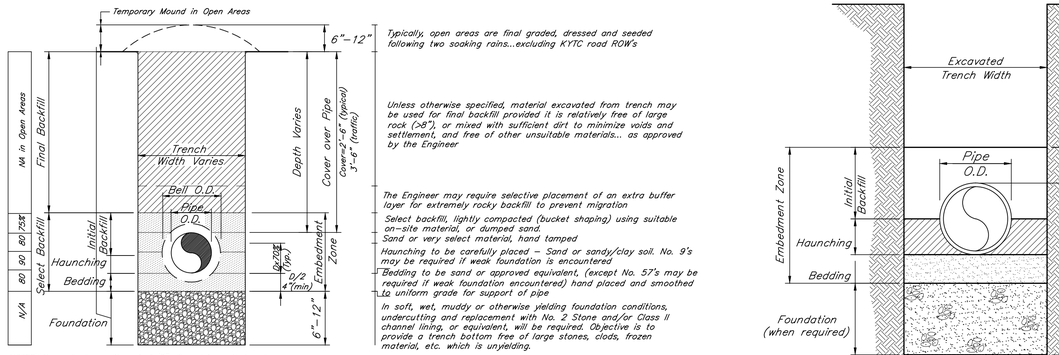
AUTOMATIC AIR VALVE INSTALLATION

Dec., 2010 N.T.S.



MANUAL AIR VALVE INSTALLATION

Dec., 2010 N.T.S.



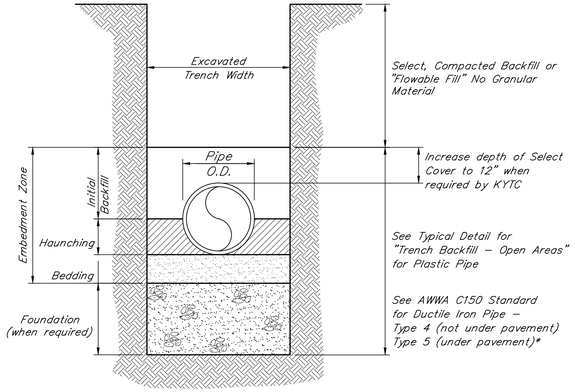
NOTES: No rocks larger than 1–1/2" allowed in embedment zone.

Typical desired densities in open areas are depicted above in the boxes to the left of the figure. In other laying situations, more stringent selection, placement and compaction will be required.

Trench width should be no wider than necessary for adequate work room and to assure safe working conditions. Nominal outside diameter (O.D.) pipe plus 6" on each side is typically considered minimal, with 8" minimum on each side for gravity sewer installation. For gravity sewer, pipe to be bedded on No. 9 stone and remainder of embedment zone to be backfilled with sand.

TRENCH BACKFILL OPEN AREAS – PLASTIC PIPE

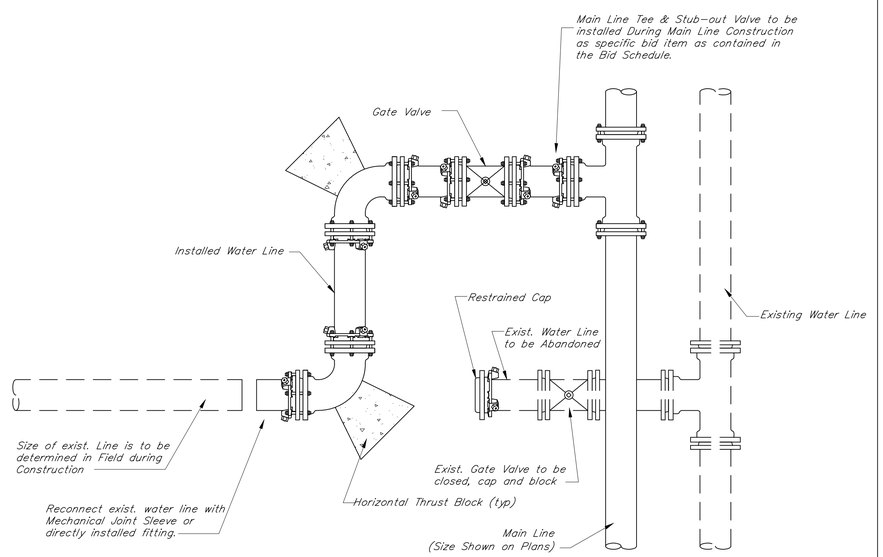
Mar., 2011 Scale: 3/4"=1'–0"



* When "Open–cutting" of State Highway is permitted, pipe laying, encasement requirements, backfill placement, pavement replacement, etc. shall be as required by the encroachment permit issued by the Kentucky Transportation Cabinet (KYTC). By reference, such permit(s) shall become part of the contract. It shall be the CONTRACTOR'S responsibility to maintain a copy of KYTC permit(s) on the job site at all times.

TRENCH BACKFILL ON HIGHWAY ROW

Dec., 2010 N.T.S.



Note:
All fittings are to be supplied with M.J. Retainer Gland Packs.

TYPICAL TIE–IN

Scale: 3/4"=1'–0"

MISCELLANEOUS DETAILS

CUMBERLAND FALLS HIGHWAY WATER DISTRICT
US 25W TRANSMISSION MAIN
WHITLEY COUNTY, KENTUCKY

COMMONWEALTH OF KENTUCKY
CARLOS F. MILLER
7384
LICENSED PROFESSIONAL ENGINEER

DRAWN BY: JKP/PTH
CHECKED BY: CFM
CHECKED BY: CFM
DATE: April 2014
SCALE: As Noted
REVISIONS

KENVIRONS, INC.
FRANKFORT, KENTUCKY

PROJECT NO.
2012059

SHEET NO.
D–1

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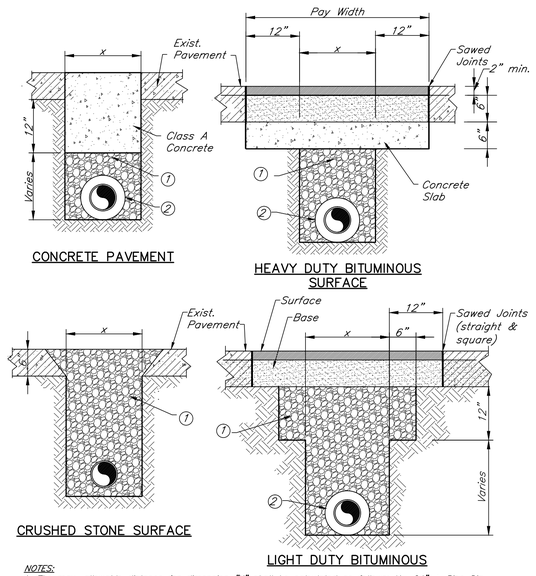


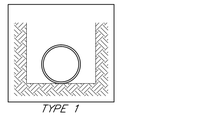
NOTES:
1. The max. allowable distance for dimension "X" shall be calculated as follows: X= 24" + Pipe Dia.
2. Concrete slab under Bituminous surface to extend 12-inches on each side to trench
3. Replace Concrete or Bit. Pavement with new pavement same thickness as existing pavement.
4. Casing Pipe is not required under private driveways.

(1) Mechanically tamped #57 crushed stone aggregate in layers not to exceed 6".

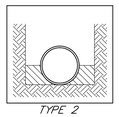
(2) Casing pipe to be 4" in diameter greater than the greatest dimension of the carrier pipe.

PAVEMENT REPLACEMENT

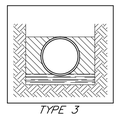
Mar., 2011 Scale: 3/4"=1'-0"



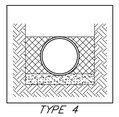
Flat-bottom trench Loose Backfill



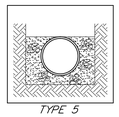
Flat-bottom trench in undisturbed earth. Backfill lightly consolidated to centerline of pipe



Pipe bedded in 4" minimum loose soil,as approved. Backfill lightly consolidated to top of pipe



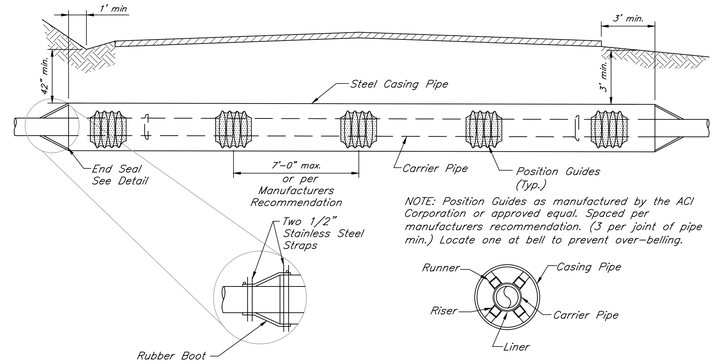
Pipe bedded in sand, gravel, or crushed stone to depth of 4" minimum. Backfill hand compacted to top of pipe (approximately 80 percent Standard Proctor).



Pipe bedded in compacted granular material to centerline of pipe, 4" minimum under pipe. Compacted granular or select material to top of pipe (approximately 90 percent Standard Proctor).

LAYING CONDITIONS FOR DUCTILE IRON PIPE

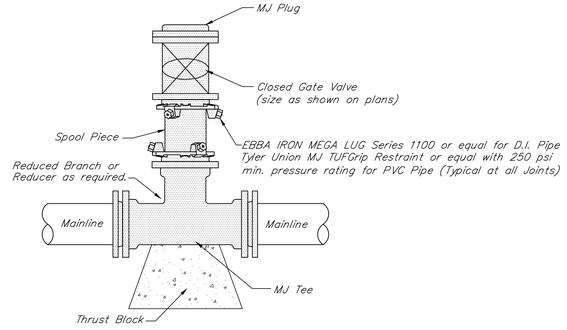
Dec., 2010 N.T.S.
Ref. AWWA C150



NOTE: Position Guides as manufactured by the ACI Corporation or approved equal. Spaced per manufacturers recommendation. (3 per joint of pipe min.) Locate one at bell to prevent over-belling.

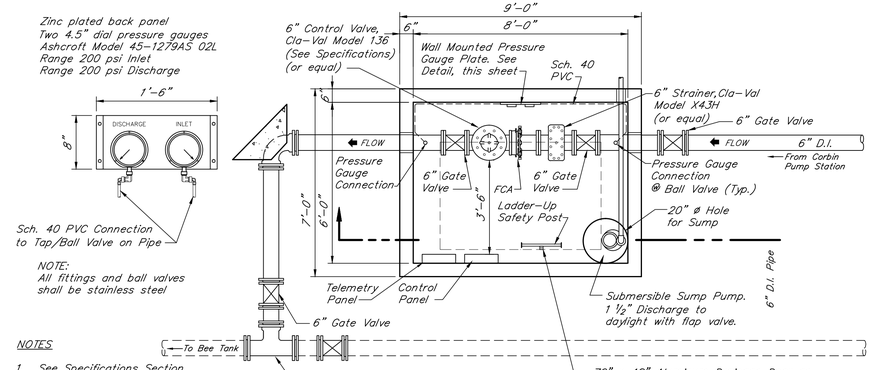
ROADWAY CROSSING INSTALLATION

Dec., 2010 Scale: 1/4"=1'-0"



STUB-OUT DETAIL

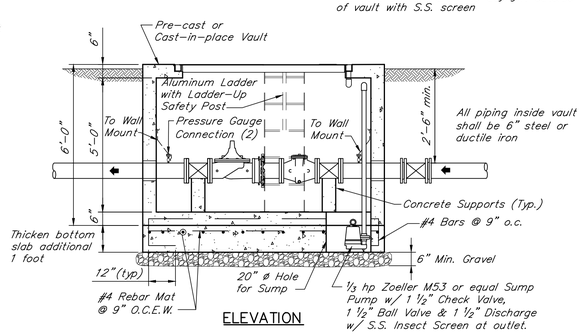
Jan., 2011 N.T.S.



NOTES

1. See Specifications Section 13105-Solenoid/Control Valve Station for additional specific requirements.
2. Telemetry equipment and installation to be provided by others.
3. Provide conduit through concrete vault walls for electrical power and telemetry connections.
4. Control Valve shall be ordered with all operating valve/pilots/ tubing on left side of valve as viewed from inlet/strainer end.
5. All pipe flange bolts shall be stainless steel.
6. Gaskets for flanged pipe shall be full face gaskets equal to TORUSEAL by American Cast Iron Pipe Co.
7. Provide stainless bolts/nuts assembled with anti-seize.
8. The solenoid control valve shall have fusion bonded coating, stainless steel tubing, Nema 4 solenoid and a single limit switch to allow the SCADA system to monitor valve status. The solenoid valve shall be equipped with check valve in the pilot tubing to prevent any backflow from the Bee Creek tank to the Corbin tank.

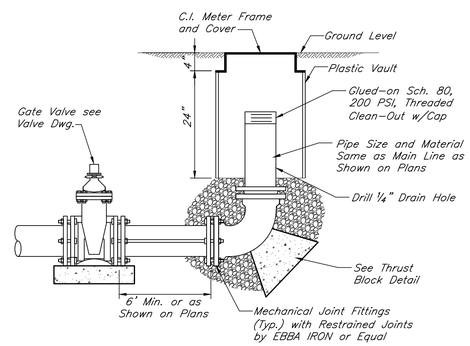
PLAN VIEW



ELEVATION

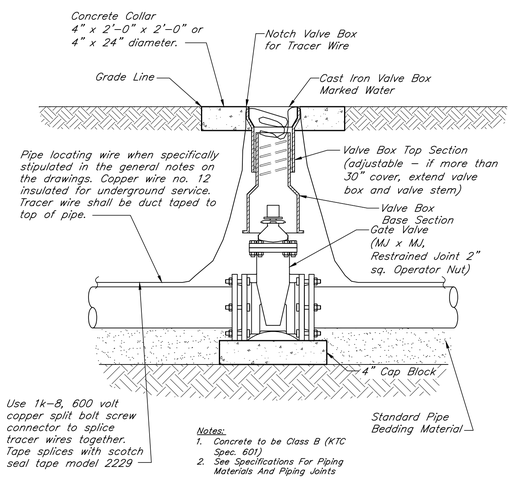
6" SOLENOID CONTROL VALVE STATION

3/8"=1'-0"



BLOWOFF ASSEMBLY DETAIL (TYPE 2)

Mar., 2011 Scale: 3/4"=1'-0"



Notes:
1. Concrete to be Class B (KTC Spec. 601)
2. See Specifications For Piping Materials And Piping Joints

VALVE BOX INSTALLATION

Mar., 2011 Scale: 1"=1'-0"

MISCELLANEOUS DETAILS

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CUMBERLAND FALLS HIGHWAY WATER DISTRICT
US 25W TRANSMISSION MAIN
WHITLEY COUNTY, KENTUCKY

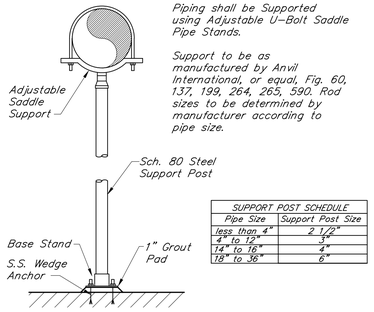
STATE OF KENTUCKY CARLOS F. MILLER 7384 LICENSED PROFESSIONAL ENGINEER

DRAWN BY: JKP/PTH
CHECKED BY: CFM
DATE: April 2014
SCALE: As Noted
REVISIONS

KENVIRONS, INC.
FRANKFORT, KENTUCKY

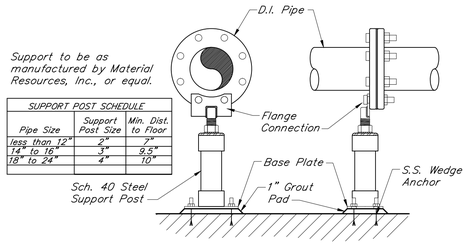
PROJECT NO.
2012059

SHEET NO.
D-2



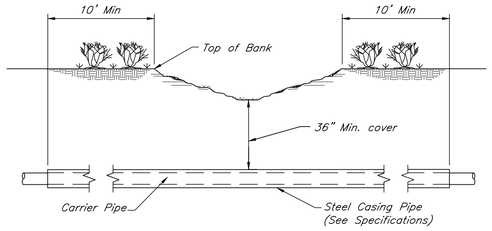
PIPE SADDLE DETAIL

N.T.S.



FLANGED PIPE SUPPORT

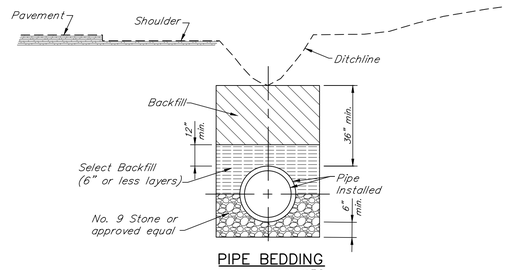
N.T.S.



Note: This Crossing Shall Be Made With Appropriate fittings to prevent Excess Joint Deflection. Normally Four (4) Fittings will be required. The Contractor, at his option, may provide extra approach Trench Depth to avoid use of Bends. Allowable Deflection of Pipe may not be exceeded under any situation. See typ. Roadway Crossing Installation Detail for Insulator placement.

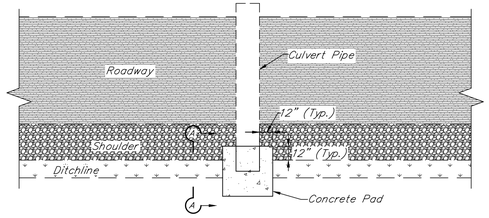
SPECIAL STREAM CROSSING IN EARTH (TYPE A)

Dec., 2010 N.T.S.



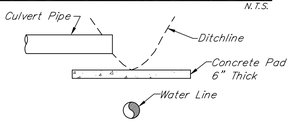
PIPE BEDDING

N.T.S.



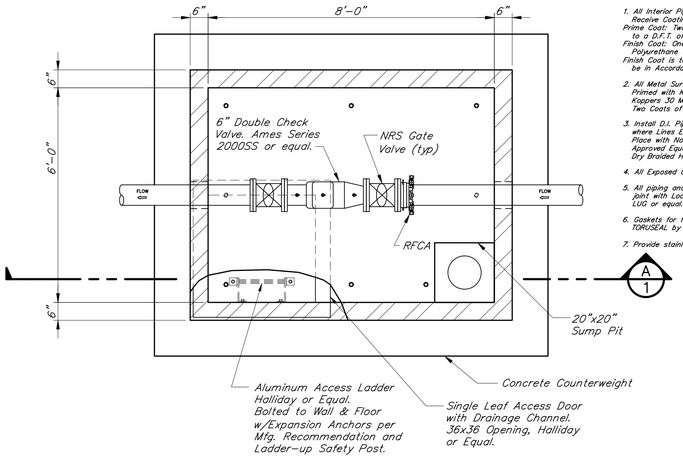
CONCRETE PAD AT CULVERT OPENING

N.T.S.



SECTION A–A

N.T.S.

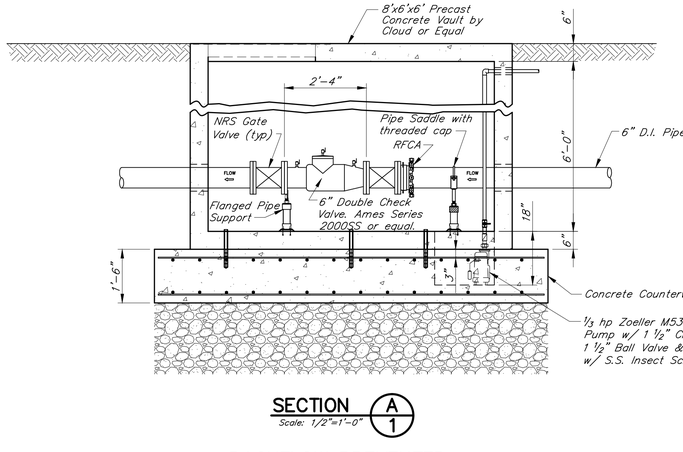


PLAN

Scale: 1/2"=1'-0"

-GENERAL NOTES-

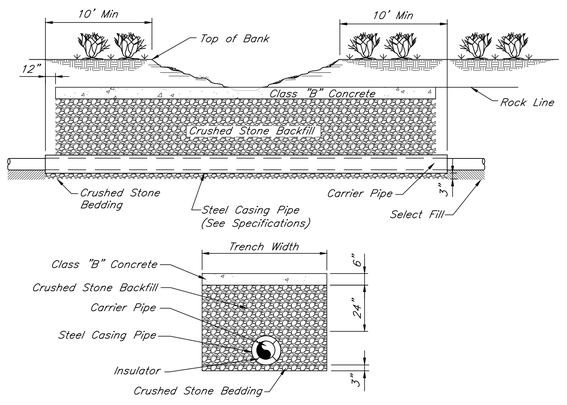
1. All Interior Piping, Valves and Metal Surfaces shall Receive Coatings as Follows:
Prime Coat: Two (2) Coats of Tnemec Series 66 or Equal to a D.F.T. of 3.0 to 5.0 Mils
Finish Coat: One (1) Coat of Tnemec Series 74 (Gloss) Polyurethane to a D.F.T. of 3.0 to 5.0 Mils.
Finish Coat is to be Gray in Color, Surface Preparation shall be in Accordance with Paint Mfg. Recommendation.
2. All Metal Surfaces in Contact with Concrete shall be Primed with Koppers 40 Passivenator (Non-Ferrous) or Koppers 30 Metal Conditioners (Ferrous) and Treated with Two Coats of Koppers 82 Asphaltic Paint or Approved Equal.
3. Install D.I. Piping thru Pipe Sleeve in Concrete Structure where Lines Enter and Exit Structure. Grout Sleeve in Place with Non-Shrink Grout such as Embeco Sonogrout or Approved Equal. Pack Around Waterline in Sleeve with Dry Braided Hemp Caulked in Place.
4. All Exposed Concrete Corners shall have 3/4" Chamfer.
5. All piping and fittings outside of vault shall be restrained joint with Locking Gaskets or EBBA Iron Series 1100 MEGA LUG or equal.
6. Gaskets for flanged pipe shall be full face gaskets equal to TORUSEAL by American Cast Iron Pipe Co.
7. Provide stainless bolts/nuts assembled with anti-seize.



SECTION A 1

Scale: 1/2"=1'-0"

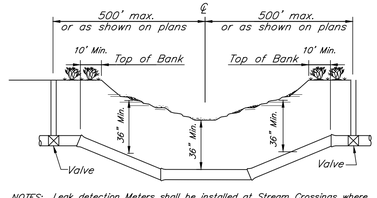
BACKFLOW PREVENTER



NOTE: This Crossing shall be made with Appropriate Fittings to prevent Excess Joint Deflection. Normally Four (4) Fittings will be Required. The Contractor, at his option, may provide extra Approach Trench Depth to avoid use of Bends. Allowable Deflection of Pipe may not be exceeded under any situation. See Typ. Roadway Crossing Installation Detail for Insulator Placement

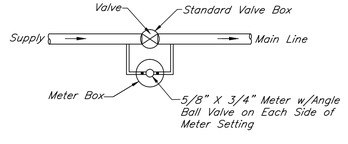
STREAM CROSSING IN SOLID ROCK (TYPE B)

Dec., 2010 N.T.S.



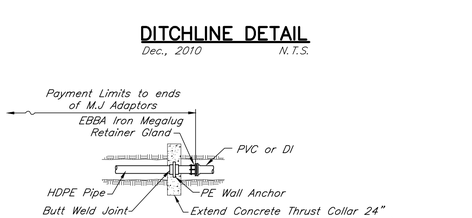
NOTES: Leak detection Meters shall be installed at Stream Crossings where indicated on the Plans. Gate Valves are a Separate Pay Item. Bid Item for Leak Detection Meters shall include the Main Line Taps, Piping, Meter Box, Setter, Ball Valves, And Meter in accordance with the Detail Shown on this drawing.

PROFILE

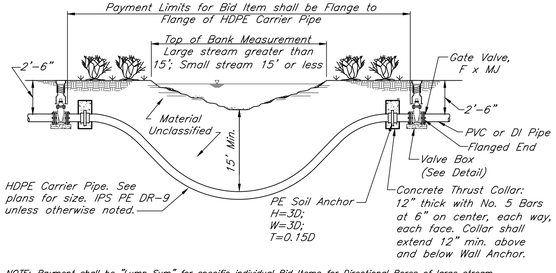


LEAK DETECTION METER

Dec., 2010 N.T.S.



END TREATMENT WITHOUT VALVE



NOTE: Payment shall be "Lump Sum" for specific individual Bid Items for Directional Bores of large stream crossings and/or some classified small streams where the physical crossing characteristics differ significantly from the other small streams in the project. Determination of required length is responsibility of Contractor. When a creek crossing test meter is shown on the drawings and it is necessary to tap the HDPE pipe for the meter connection, the tapping saddle specifically manufactured for HDPE pipe shall be used.

Payment shall be "each" for directional bores of small stream crossings unless contained in an individual specific bid item. All small stream crossings in the project shall be considered the same regardless of width (up to 15 LF.) or depth. It is the responsibility of the Contractor to determine an average unit price that will be used for payment for each instance a blue line stream is crossed. Stream crossings may be added, for extended lines beyond those shown on the plans, at the same unit price providing the crossings are reasonably similar to those in the initial project. Stream crossings may be deleted, without affecting the unit price, if a line is deleted or shortened.

DIRECTIONAL BORE FOR STREAM CROSSINGS

Feb., 2013 Scale: 3/16"=1'-0"

DITCHLINE DETAIL

Dec., 2010 N.T.S.

MISCELLANEOUS DETAILS

CUMBERLAND FALLS HIGHWAY WATER DISTRICT
US 25W TRANSMISSION MAIN
WHITLEY COUNTY, KENTUCKY

COMMONWEALTH OF KENTUCKY
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